



DEPARTMENT OF THE NAVY
NAVAL UNDERSEA WARFARE CENTER DIVISION
1176 HOWELL STREET
NEWPORT RI 02841-1708

IN REPLY REFER TO:

4200
Ser 3591A/3
22 August 2003

Gentlemen:

The Naval Undersea Warfare Center, Newport Division (NUWCDIVNPT) invites your company to review and to comment on the attached Draft Request for Proposal (RFP), **N66604-03-R-5873** for the Maintenance and Operation of the Atlantic Undersea Test and Evaluation Center (AUTEC). We are seeking the most effective and efficient contract to fulfill our requirements.

Note: This is a Draft Solicitation; do not submit a proposal.

Comments and questions are invited on all aspects of this draft, including its structure. If you consider your company substantially capable of performing this effort, but identify impediments in the Performance Work Statement (PWS), Personnel Qualifications or other requirements of the attachments, please tell us. Provide specific information regarding how our requirements would need to be changed for your firm to be capable of performing the contract, or for competition to be optimized generally. Do not send any cost data, resumes or other proprietary information.

Any suggestions or comments will not be treated as proprietary, and may be reflected in the formal request for proposal. We will consider all information received in finalizing the formal solicitation. Respondents should be aware, however, that the needs of the Navy will determine the final RFP text. This is likely to mean that some suggestions will not be adopted.

The attached documents, comprising the draft solicitation, contain only the unique aspects of the proposed solicitation, which will result in a contract. The attachments represent the initial selection of data to be provided for industry review and comment. The data will be supplemented with additional information (contract clauses and attachments) as they become available. By September 12, 2003 all pertinent draft clauses and attachments will be posted.

This acquisition is follow-on to contract N61339-97-C-0001. The current contract is available for viewing at <http://www.npt.nuwc.navy.mil/contract> under Information Documents – Atlantic Undersea Test and Evaluation Center (AUTEC). At that site, copies of applicable documents cited in the PWS are available for viewing as well as other relevant information about AUTEC. Interested parties should fully familiarize themselves with this site. One-week site visits to AUTEC are now tentatively scheduled for the mid-January time frame. The number of visitors per company to the island will be limited to not more than two at a given time.

The government anticipates release of the formal RFP by January 16, 2004. Accordingly, this office should receive all responses to this draft RFP no later than November 10, 2003. You may respond by letter or by E-MAIL addressed to oliverwt@code59.npt.nuwc.navy.mil. The formal RFP will be available upon issuance on the NUWCDIVNPT Commercial Acquisition Department homepage at <http://www.npt.navy.mil/contract/>.

The Pre-Solicitation Conference is scheduled for Tuesday, 30 September 2003, starting at 9:00 AM. The conference will be held in the Chafee Auditorium, Naval Undersea Warfare Center Division, Newport, RI. Please forward questions you would like to have covered at the conference as early as possible to the Contracting Officer. Visit requests are required and information regarding the request as well as directions to NUWCDIVNPT is located at the following web site: <http://www.npt.nuwc.navy.mil/>.

Due to the number of vendors who have expressed an interest in the AUTECH follow-on contract, it is not possible to accommodate requests for individual visits with Government program and contracting office personnel.

Sincerely,

A handwritten signature in dark ink, appearing to read 'W. Oliver', with a long, sweeping horizontal stroke extending to the right.

Walter T. Oliver
Contracting Officer

Draft Solicitation N66604-03-R-5873

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AUTEC

Contractual Support Services

Statement of Objectives (SOO)

1.0 AUTEC Mission:

Provide Undersea Warfare (USW) test & evaluation and readiness assessment capabilities to the U.S. Navy. Meet the following strategic goals:

- Exceed our customer's expectations
- Remain affordable
- Expand the customer base
- Improve productivity and performance
- Nurture a high-performance workforce
- Safeguard our personnel and habitat

2.0 Specific Objectives:

Offerors are challenged to provide innovative and cost-effective processes and initiatives to meet the specific objectives outlined in the following paragraphs while meeting all performance work statement requirements and performance standards.

2.1 Effective Management and Processes:

Provide qualified and experienced management leadership and processes that, when teamed with the Government, deliver value to AUTEC customers. Ensure proactive and sustained excellence in providing accurate, safe, secure, timely, and efficient support to meet the Government's established requirements. Basic characteristics and attributes of effective management and processes include:

- Assignment of a proactive leadership team that is experienced in:
 - managing, operating, maintaining, and modernizing large, complex technical or industrial facilities;
 - managing the full spectrum of support services vital to AUTEC's mission accomplishment; and
 - managing change.
- Processes that are streamlined, well-defined, and incorporate performance measures to facilitate timely decisions and guide actions. Procedures that involve the minimum resource outlay to accomplish work while achieving schedule requirements and performance goals.

- Personnel and scheduling flexibility that efficiently support a dynamic requirements environment across all facets of AUTECH's test and evaluation mission execution. Results that include quick, efficient, and effective adjustment of labor and material resources.
- Effective lines of communication with all AUTECH partners, customers, and interfacing contractors that ensure effective mission execution.
- Use of industry best practices, standards, and models for operations, maintenance, engineering, and support functions that reduce cost and enhance productivity within the context of laws, regulations, policies, and the AUTECH environment. Waivers for those practices shown to be beneficial but prevented by current regulations and policies are proposed.
- Effective customer relation activities as demonstrated by proactive customer engagement (includes both formal and informal exchanges), feedback, and repeat business.
- Responsive and effective mission support services.

2.2 Performance Dependability:

Ensure high asset (test facilities, plants, support facilities, utility systems, and equipment) reliability, availability, maintainability, and configuration management. Basic characteristics and attributes of performance dependability include:

- Operations, maintenance, investment, and base support actions that are responsive, well integrated, and thoroughly coordinated with customer and Government interests.
- Use of advanced maintenance management techniques and infrastructure performance data to drive decisions.
- Minimal interruptions to operations and services and mission objectives and customer satisfaction are attained.
- Schedule execution reflects the benefits of proactive maintenance, well-planned lifecycle sustainment (modernization and upgrade), and configuration management of all assets.
- Maintenance and repair, improvement and modernization, and technology investments are effectively applied to eliminate gaps between current asset capability and forecasted needs.
- Existing infrastructure is reduced or modified and new infrastructure is recommended to meet mission needs.
- AUTECH's physical, environmental, and cultural assets are protected.

2.3 Efficient and Effective Information Technology and Systems:

Provide information technology, systems and processes that integrate and streamline information flow to facilitate timely management decisions, enable reliable facility operations, and provide high quality test and evaluation data. Basic characteristics and attributes of efficient and effective information technology and systems include:

- All information technology capabilities inter-operate within the AUTECH IT architecture.
- Business information systems (including financial and work management systems) are integral to the day-to-day decision processes and provide information needed by both the contractor and government through a single user interface.
- Data flows smoothly to and from government standard information systems in a timely, reliable, efficient, and accurate manner.
- Data acquisition and facility control systems are effectively integrated to provide accurate data and safe, responsive facility operation.
- Development and deployment of modeling and simulation tools effectively support the test and evaluation mission.
- Full compliance with information security directives is expected and achieved.

2.4 Cost Reduction and Control:

Significantly reduce and aggressively control the cost of AUTECH test and support operations and services while maintaining technical excellence within manageable levels of risk. Basic characteristics and attributes of cost reduction and control include:

- Cost reduction and other improvement initiatives that are well defined and include justifications, trade-offs, investment requirements, expected returns, risk assessments, and implementation plans.
- Proposed initiatives that leverage ongoing AUTECH initiatives.
- Initiative results that are measured, validated, and documented.
- Cost factors that are traceable to work outputs and provide real-time information to support mission decisions.
- Cost control that includes accurate accounting, thorough assessment, and timely and sound recommendations.

STATEMENT OF WORK

ATTACHMENT 2

**PERFORMANCE WORK STATEMENT
(PWS)**

**OPERATION AND MAINTENANCE OF
THE ATLANTIC UNDERSEA TEST AND
EVALUATION CENTER
(AUTEC)**

**NAVAL UNDERSEA WARFARE CENTER DIVISION
NEWPORT
NEWPORT RHODE ISLAND**

STATEMENT OF WORK

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INTRODUCTION

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The mission of the Atlantic Undersea Test and Evaluation Center (AUTEC) is to provide a deep-water test and evaluation facility for making underwater acoustic measurements, testing and calibrating sonars, and providing accurate underwater, surface and in-air tracking data on surface ships, submarines, aircraft, and weapon systems in support of the U.S. Navy's Undersea Warfare (USW) and undersea research and development programs, and for assessment of Fleet operational readiness.

The Naval Undersea Warfare Center Division Newport, Rhode Island, is the parent Command of AUTEC. The Government range is located at Andros Island, Commonwealth of the Bahamas. Government range management and administrative functions are performed at West Palm Beach, Florida. Government program, contract, and financial management functions are performed at Newport, Rhode Island.

Due to the limited resources of the local Bahamian economy, the Main Base (Site 1) and three of the four smaller downrange sites on Andros Island are self-sufficient, providing all their own utilities, sewage, housing, transportation, and related services. Almost all food, fuel, material, equipment, spare parts, etc., must be shipped from the Continental United States (CONUS).

The most heavily used of Government's test facilities, the Deep Water Range, operates approximately 3500 hours each year, with tests normally scheduled six days per week, holidays excluded. Test operations are interrupted only for periods of scheduled range maintenance or range stand-down. Such non-test periods are normally scheduled by the Government for occasional 6-10 day periods and for the last two weeks of December.

Specific Contractor manning and individual systems/equipment readiness responsibilities during periods of interrupted test operations are delineated in the various individual Chapters of this Specification. In general, contractor responsibilities during non-test periods can be summarized as follows:

- ◆ During periods of scheduled range maintenance, Test Operations Support Systems and other capabilities may, as required, be rendered inoperable for the purposes of performing corrective maintenance or significant preventative maintenance, installing modifications, etc. The presence of operating personnel is not required.
- ◆ Where appearing, the term "except for scheduled maintenance periods authorized by the Government" recognizes that although maintenance and/or modification of major assets such as vessels, or capabilities, or critical systems such as computer hardware, networks, etc., is also periodically required, such activity may not necessarily coincide with scheduled range maintenance periods.

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- ◆ During periods of range stand-down, Test Systems and other capabilities and equipment are left inoperable, although powered-down or in otherwise secured condition, requiring only nominal effort to resume normal operations tempo. Only support for critical functions, as described in the individual Chapters of this Specification, is required during these periods.

Administrative and other non-critical tasks and functions required by this Contract will be supported during normal working hours. Normal working hours at the West Palm Beach and Andros Island Government Detachments are 0800 to 1700, with one hour for lunch, daily, Monday through Friday, holidays excluded. Where appearing in this Specification, "holidays" shall be interpreted to mean those recognized by the Federal Government of the United States for purposes of granting holiday leave.

In addition to the facilities located on Andros Island, the Government provides roughly 17,000 square feet of office space plus 5,000 square feet of light industrial space in the West Palm Beach area.

DESCRIPTION

The primary Government Operational Areas (OP Areas) are located in the Tongue of the Ocean (TOTO) in the Bahamas. The test range area encompasses the air and underwater space adjacent to the east coast of Andros Island, extending approximately 45 miles southeastward from Site 1 (located near Fresh Creek), and from 5 to 20 miles seaward from shore. The facilities and instrumentation available to support range operations are located ashore at Site 1 and downrange Sites 2, 3, and 4.

Government's Main Base, Site 1, encompassing approximately 420 acres, and three of the four downrange sites, of about six to ten acres each, are used to house personnel and shore-based instrumentation systems. Site 1 is a completely self-sufficient complex of buildings and facilities owned by the Government. Included are potable water facilities, electrical and sanitary facilities; living, messing, berthing, and recreational facilities; communications and technical laboratory facilities; fuel storage, public works, maintenance shops and warehouses; and the Range Support Shop facilities. Because Andros Island is generally underdeveloped, any outside support required is received by sea or air from CONUS.

The downrange sites (Sites 2, 3, 4, and 7 (there are no Sites 5 or 6)) are located 15 to 50 miles southward from Site 1 and are spaced approximately 8 to 15 miles apart. Site 7 is closed and only periodically monitored. Site 2 is the only site accessible by road from Site 1. All downrange sites, including Site 2, are accessible by sea and helicopter; landing pads are provided at all sites. The downrange sites support various instrumentation systems including radar, Radio Frequency (RF) interferometers, radio, microwave, timing, in-water tracking system, signal processors, tape recorders and range control equipment. Data from downrange tracking stations are transmitted to data processing and display equipment located at Site 1 via radio, wire or microwave link.

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TASKING

Government supports a variety of test and training programs in fulfilling its mission. Government, in turn, tasks the M&O Contractor to perform required work and provides guidance in methods/procedures via letter, Letter of Direction (LD), or Work Order (WO). A letter or LD is used for tasks or guidance which do not require separate accumulation of costs. A letter is written for unique, short duration tasks or guidance while a LD is written for tasks or guidance of a continuing nature. All other Government direction will be provided by WO. A WO is a Government document that tasks the Contractor to perform specific work, or to provide specific services for which the accumulation of cost data is required. The Work Order Numbering System uses an alphanumeric code. This system provides Government with a unique program or work package identifier for use in scheduling and controlling range/support resources and for accumulation of cost data. "Standing" Work Orders are currently issued for the performance of tasks expected to continue for the term of the contract. A list and description of these work orders are provided as a general reference. The Work Order/Test Number Structure is described in Appendix 1.2.

CONCEPT OF MAINTENANCE AND OPERATION (M&O)

The Government's concept of Maintenance and Operation employs a civilian contractor to provide the majority of the manpower and expertise needed to support and accomplish AUTEK's mission, and to staff only that minimal number of Government personnel required to perform inherently Government functions and to provide corporate memory and continuity.

Under this concept, Government personnel work directly with Range Users to determine testing requirements and scheduling, and with Government's Program Sponsor for matters such as funding and planning. Contractor personnel assess tasks that need to be accomplished and work directly with their Government counterparts to establish priorities. Contractor personnel then develop the detailed procedures and methodologies and manage their internal resources to perform the work required.

The successful execution of these inter-related responsibilities requires that a close working relationship exist between Government and Contractor personnel at all levels.

The operation of Government is funded from two basic sources. The first of these is an annual appropriation from Congress, referred to as (MRTFB) Institutional Funding. The second is from customers who test at AUTEK, referred to as Direct Funding. At the highest level, the Institutional Funds can be viewed as supporting all indirect costs of operation, while Direct Funds cover all costs readily identifiable to a particular customer's test support requirements including labor, material, facilities, minor construction, utilities, equipment and supplies, items damaged or consumed during testing, or any resources or item maintained for a specific customer. By law, Government's annual expenses cannot exceed the total of all such funds received.

The Government has employed numerous methodologies and techniques to improve Government processes and our ability to effectively allocate resources. We have stressed tools such as Business Process Re-Engineering, Quality Management through establishment of empowered

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Quality Management Boards and Process Action Teams, strategic planning, goal setting, benchmarking, and team building in partnership with our Maintenance and Operations Contractor. The continuation of these initiatives, as well as the need to identify and foster other innovative means to further improve efficiency and reduce costs on an on-going basis are important.

AUTEC's Government organizational structure, together with its relationship to NUWC Division Newport, Rhode Island, is described as follows:

- ◆ Commander, NUWCDIVNPT – Code 00

- ◆ Officer-in-Charge, NUWC Detachment AUTEC - Code 05:

Exercises command functions as defined by Navy Regulations. Responsible for: Range Safety and Area Coordination matters as relate to use of Government's assigned operating areas; for representing the Commander, NUWC Division Newport, for official visitors, military affairs, and protocol; coordinating matters related to emergency planning, disaster control, civil defense, and local security; and, in conjunction with Code 70, representing AUTEC in matters concerning the Bahamian Government.

- ◆ Head; Engineering, Test and Evaluation Department - Code 70

- ◆ AUTEC Program Manager - Code 705:

Responsible for the overall financial planning, resource allocation, and funds management for AUTEC; assuring the cost effectiveness of Government's existing and proposed instrumentation, infrastructure, facilities, support assets, and other capabilities; and for managing the AUTEC Maintenance and Operations Contract – ensuring that contractual requirements match Government's needs and that performance is monitored to ensure that contract provisions are met. Code 705 is located at NUWC Division Newport, Rhode Island.

- ◆ Enterprise Teams - Codes 7005, 7006, and 7007:

Government personnel are assigned to one of three Business Area Enterprise Teams that share responsibility for the successful accomplishment of Government's mission. The Business Areas are defined as follows:

- ◆ Business/Customer Operations (Code 7005): Matters related to products and services needed to support the customer-related administrative and sponsor-funded major investment planning and financial tracking functions of AUTEC. Code 7005 is located at NUWC Division Newport, Rhode Island.
- ◆ Test Operations (Code 7006): Matters related to tasks, products, services, and assets needed to support AUTEC's Range User (e.g. customer) test programs. Code 7006 is located at AUTEC's West Palm Beach, FL Detachment.

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- ◆ Base Operations (Code 7007): Matters related to tasks, products, services, and assets needed to support and sustain AUTECH as an operational Navy facility. Code 7007 is located at AUTECH's West Palm Beach, FL Detachment.

Each Government Enterprise Team, is structured such that their fields of expertise and areas of responsibility encompass the requirements of this Specification. This structure was established in order to:

- ◆ Provide a means whereby Government personnel could work with their contractor-identified counterparts, with similar expertise, at various levels to develop work plans, establish related annual budget requirements and priorities, and subsequently manage/monitor task, cost, and schedule performance.
- ◆ Facilitate the daily interaction between Government and Contractor personnel necessary to accomplish AUTECH's mission.

FUTURE CAPABILITIES

1. Numerous investment initiatives are in progress to deliver new or improved capabilities for AUTECH test operations and customer support and to accommodate ongoing changes in the level of range operations. The AUTECH Improvement and Modernization program, as well as other venues, will be delivering equipment and systems that will be integrated into the existing AUTECH infrastructure and will be transitioned to the M&O contractor for support. The following descriptions are intended to provide an overview of the expected delivered capability:

Multi-Link System Test and Training Tool (MLST3): The third phase of the Offboard Advanced Systems Stimulus (OASYS) program will be the delivery of the MLST3 produced by Northrop Grumman Information Technology. The MLST3 supports interoperability certification testing for Link 16, Link 11, Link 11B, and Link 4A Navy tactical communications system. The AUTECH Contractor will assume maintenance and operations responsibility for this system. Operations personnel will require familiarity with Navy tactical communications systems, and maintenance personnel will require familiarity with personal computers, servers and radio equipment. Expected IOC is 1st quarter FY04.

Underwater Range Data Communications (URDC): The URDC program will deliver an acoustic telemetry system that will enable communications with a submerged submarine at speed and depth. This system will leverage existing acoustic tracking pinger technology and the bi-directional hydrophones to provide encrypted digital communications with submarines operating at AUTECH. The Contractor will assume maintenance and operations responsibility for this system. The URDC shipboard equipment will be contained in ruggedized portable PCs. The shore-based equipment will be similar to the existing AUTECH digital signal processing equipment. URDC software maintenance and configuration management may be performed by the

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Government or the AUTECH M&O contractor based on the best business case alternatives at the time of system delivery. Expected IOC is 4th quarter FY04.

Rangeware Improvement (RWI): The RWI program will upgrade the Command & Control, I/O Processing, and Host Processing hardware and software systems with newer technologies to improve operational capabilities and maintainability. The major transition brought by the RWI program will be the migration from legacy Unix-based systems using the C programming language to the MS Windows/Intel PC environment using the Java programming language. It is currently planned that software configuration management and upgrade will be performed by the Government. However, it is also anticipated that the AUTECH M&O contractor will be responsible for software maintenance and defect reporting and correction. Expected IOC is FY06.

AUTECH Minefield and Shallow Water Range (AMSWR): The existing underwater tracking array located in the Berry Islands will be brought to shore during FY04. The shore landing point of the cable will be on Little Stirrup Cay where an acoustic signal processor and satellite uplink will also be located. Data from the signal processor will be linked to AUTECH Site 1 where it is anticipated that an additional operations room will be created to support this area. The equipment provided will have roughly equivalent functionality to the existing Portable Tracking System (PTS) equipment and is not anticipated to require additional personnel skills for operations and maintenance. Expected IOC is 4th quarter FY04.

Anti-Terrorism/Force Protection (ATFP): Numerous technologies for anti-terrorism and force protection are being evaluated for installation on Andros, including remote surveillance, covert surveillance, area denial and access denial solutions. Effectiveness and operability will be key factors considered during evaluation of individual solutions for applicability to the security challenges associated with protecting the AUTECH facility. ATFP technology requirements are not well defined at this time.

2. Because of its position as the sole Atlantic major undersea range AUTECH is viewed by the Navy as a resource to be leveraged. For example, three Atlantic undersea systems proposed for construction by the Navy in recent years have included AUTECH as the potential/likely systems operator. These particular systems are the East Coast Shallow Water Training Range (ECSWTR), South TOTO Acoustic Range (STAR), and Fleet Naval Gunfire Scoring System (FNGSS). No significant activity is seen regarding these systems at this time; however, the potential exists for the scope of this statement of work to be expanded to include the operation of systems in operational and geographical areas other than those currently specified.

Note

- ◆ A Glossary of commonly used Acronyms is attached as Appendix 1 to this document.

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CHAPTER 1.0

GENERAL MANAGEMENT

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1.0

This chapter of the Performance Based Statement of Work (PBSOW) identifies the general management requirements of the contract. General Management incorporates the broadest elements of this PBSOW: overall project management, business operations, and information technology.

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1.1 OVERALL PROJECT MANAGEMENT

With the exception of the Contractor's Project Manager, this Specification is not meant to require any specific Contractor organization or management structure. Similarly, it is not a requirement of this Specification that all tasks be executed by the Contractor's own in-house labor force. The Contractor shall propose and implement an efficient, cost-effective approach to accomplishing all of the tasks and responsibilities described herein. The Contractor may propose to purchase services to perform any of the specific tasks or to execute specific responsibilities described.

Contractor Responsibilities and Workload Factors have been provided throughout this Specification in order to clarify the effort to be performed. The Workload Factors are projected estimates for the basic contract and option periods and should not be construed as a fixed workload for the entire contract period. The actual workload will probably vary. Most routine functions are governed by AUTC Operating Control Directives (OCDs). A complete list of OCDs may be found in Appendix 1.1 of this Specification. The OCDs and other documents listed may be changed or superseded at any time. OCDs and other documents cited herein should be construed to mean the latest applicable version thereof.

The Contractor is encouraged to cross-utilize personnel to the maximum extent possible. Any cross-utilization must, however, be realistic in order to avoid jeopardizing maintenance or operations in any way.

AUTC serves both RDT&E and Fleet programs by providing accurate, reliable test data in a responsive, flexible, and cost effective manner, and by maintaining the range and its support facilities in a continual state of readiness. The Government reserves the right to require the conduct of calibration tests or other procedures to certify proper operation of all equipment. Such requirements are described in the various chapters of this Specification.

1.1.1 APPLICABLE DOCUMENTS

Operational Control Directives (OCD) and AUTC Policy and Procedure (APP) documents applicable to this statement of work are listed in Appendix 1.1.

1.1.2 REQUIREMENTS

1.1.2.1 The Contractor shall provide a Project Manager (exact title is as established by the Contractor) who shall have overall responsibility for the execution of all tasks required by this Contract. The assigned Project Manager shall be the Contractor's primary interface with senior Government officials concerning matters of policy, performance, and efficiency of work performed under this Contract. This individual, assisted by others, shall be responsible for the administration, direction, and overall management of the Contractor's organization.

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1.1.2.2 The Contractor shall provide proactive management focused on integrating and optimizing management functions across the PBSOW. The Contractor shall develop a management structure based on open communication and focused on the best interests of AUTEC and its mission.

1.1.2.3 The contractor shall provide management which clearly communicates AUTEC priorities, minimize disruptions based on fluctuating workloads, effectively and efficiently utilize manpower and seamlessly integrate subcontractor involvement /effort.

1.1.2.4 It is the responsibility of the Contractor to inform the Government of all system, equipment, or asset failures that affect, or may affect Government's ability to perform its mission. When any such failure occurs, the Contractor shall immediately prepare, and forward to the Government, a System/Equipment Outage Report.

1.1.2.5 The Contractor shall restore all equipment to operational status as quickly as possible by replacement of components and subassemblies. The components/sub assemblies may then be repaired by either the Contractor or the manufacturer or others, whichever the Government deems to be most cost effective.

1.1.2.6 The Contractor shall provide facilities at the Palm Beach International Airport to maintain required transport/cargo aircraft; warehouse material en-route to and from Andros; and to check-in/load Andros Island-bound passengers and their baggage.

1.1.2.7 The Contractor shall create and maintain a centralized web-based reporting system of all performance measure data that will be used in support of meeting the performance requirements summary table cited at the end of each chapter of this PBSOW.

1.1.2.8 The Contractor shall comply with all The United States Federal laws and regulations, as well as the lease agreement between the United States of America, and The Commonwealth of the Bahamas.

1.1.2.9 The Contractor shall arrange for manufacturer or other procured technical services of systems/equipment on a case-by-case basis considering cost effectiveness and mission critical requirements as approved by Government.

1.1.2.10 Contractor shall cooperate with and support all audits, information/data requests, and inspections performed at AUTEC by the Navy and other Government activities.

1.1.2.11 The Contractor shall perform all requirements cited in all chapters of this PWS in accordance with the AUTEC Schedule of Operations, published Operations Directives, and all OCDs, SOPs and APPs.

1.1.2.12 The Contractor shall perform all routine, day-to-day operations and maintenance associated with the requirements cited in all chapters of this PWS. The Contractor shall maintain all equipment in accordance with the standards and practices established by and/or as delineated

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in original equipment manufacturers maintenance and operation manuals or alternate methods that have been reviewed and approved by the Government.

1.1.2.13 The Contractor shall provide and maintain technical documentation for all new or modified equipment , facilities and systems installed in or supportive of AUTECH. Such documentation shall include but not be limited to complete, accurate engineering drawings, technical (installation, operating, and maintenance) manuals, distribution system drawings, maintenance procedures, and parts lists.

1.1.2.14 The Contractor shall provide technical expertise to Purchasing for procurement equipment and services including support specification writing; technical evaluation of proposals; cost review; quality review; technical qualification of sources; preparation of inspection and acceptance procedures; and conduct of acceptance test.

1.1.2.15 The contractor shall ensure that routine preventative maintenance is conducted on a not-to-interfere basis with scheduled range operations.

1.1.2.16 The contractor shall work cooperatively with the Government to ensure that all tasking is conducted in accordance with the defined Work Order process.

1.1.3 WORKLOAD FACTORS

1.1.3.1 Frequency and extent of required actions and reports are detailed within applicable documents, specification chapters, and CDRLs.

1.1.3.2 No Government Independent estimate for the completion of the work is defined for this chapter.

1.1.4 KEY PERSONNEL/PERSONNEL QUALIFICATIONS

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

1.1.5 GFP

None required for this chapter.

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1.1.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE

Performance Objective	PWS Paragraph	Performance Expectation	Method of Assessment
Effective Overall Management of Contractor operations	1.1.2	Utilization of personnel and resources rarely fail to meet established goals and consistently achieve high levels of customer satisfaction.	Monthly Evaluation of contractor's performance data and customer feedback.

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1.2 BUSINESS OPERATIONS

Business Operations encompasses all functions relative to General Information Management and Services required to sustain AUTECH in the performance of its mission. To accomplish these functions the Contractor shall perform tasks relative to Business Operations such as Internal/External Communications and Publications, Configuration Management, Technical Library Digital Imaging, Workforce Training, Administrative, Secretarial, U.S. Navy Post Office, Command Religious Program, and Travel Coordinator.

AUTECH relies upon reference material, in the form of technical and procedural publications, manuals, and other documents from outside sources, manufacturers, etc., both to operate and maintain the various systems, equipment, and facilities and to ensure that personnel are provided access to adequate technical information. Refer to Appendix 1.2

Typical Reference Material

- ◆ Joint AUTECH Project Procedures (APPs)
- ◆ Operating Control Directives (OCDs)
- ◆ AUTECH Reference/Policy Documents
- ◆ AUTECH Maintenance System (AMS)
- ◆ Document Control (DC) Forms

Vendor proprietary information shall not be commingled with these documents.

Digital Imaging Services entails still photography, employing both digital and traditional media, closed-circuit television programming and audio and video programming.

To ensure a competent and qualified workforce, AUTECH supports on-going formal, informal, and on-the-job training. A list of training courses is presented in Appendix 1.2

Personnel assigned to, or visiting, Andros Island in support of AUTECH, are subject to the conditions and jurisdictional agreements between the Government of the United States of America and the Government of the Commonwealth of the Bahamas, and must be acquainted with its provisions. Specific training courses for technical and non-technical personnel are required in order to assure that any requisite unique skills are acquired and maintained as may be needed to carryout assigned tasks and responsibilities.

A Technical Library, located at Site 1 on Andros Island, has been established for use by Contractor, Government, and Range User personnel.

The Contractor is required to perform general administrative and clerical tasks in support of on-site NUWC Government operations including Government arranged on-site tours; travel reservations and ticketing; tracking and distribution of general correspondence; incoming/outgoing mail; training requests; work orders; data entry of financial documents and

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maintenance of a central filing system (electronic and hard copy). Support is required for the Government's Command Religious Program on ASD; US Post Office mail sorting and distribution support; and Administrative assistance to the Navy Liaison Officer in Nassau.

1.2.1 APPLICABLE DOCUMENTS:

1. DoD Postal Manual Volume I and II
2. OPNAVINST 1730.1 (Series); Religious Ministries in the U.S. Navy
3. OPNAVINST 5530.14 (Series); DoN Physical Security and Loss Prevention
4. NAVAIR 00-25-100; Naval Air Systems Command Technical Manual/Program
5. SECNAVINST 7010.6
6. American Library Association Rules for Filing Catalog Cards, Pauline A. Seely, Chairman and Editor, AMERICAN LIBRARY ASSOCIATION, Chicago
7. COMMONSENSE CATALOGING, A CATALOGER'S MANUAL, Rosalind E. Miller and Jane C Terwillegar, The H.W. Wilson Company, New York
8. CUTTER-SANBORN Three-Figure Author Table, (SWANSON-SWIFT REVISION), Richard A. Cutter, Libraries Unlimited Inc, Littleton, CO., 1976
9. IBM compatible software program: TECHNICAL PUBLICATIONS LIBRARY PROGRAM provided by the Naval Air Technical Services Facility (NATSF)
10. All relevant Government documentation listed in Appendix 1.2.

1.2.2. REQUIREMENTS:

1.2.2.1. The Contractor shall develop and maintain a General Business Operations Management program approved by the Government. This information shall be made available on an AUTECH Intranet. The contractor shall ensure communication and dissemination of information to AUTECH customers and general population for incoming/outgoing correspondence/Internet/Closed Circuit Cable Television/ Intranet web pages, Audio Visual (photo/video); and adherence to required training programs.

1.2.2.2. The Contractor shall provide the following services: technical writing; editing; typing (typewriter and word processing); drafting; (including CAD). Technical illustrating personnel are required to develop and produce finished products of professional quality and to maintain all of Government's project documents.

1.2.2.3. The Contractor shall maintain AUTECH audiovisual equipment and related assets. Audiovisual support services shall be provided in accordance with the AUTECH Schedule of Operations, published Operations Directives and Workload Factors.

1.2.2.4. The Contractor shall maintain content and publications of Government's public Internet homepage, an electronic marketing document that can be accessed through a web Internet browser.

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1.2.2.5. The Contractor shall provide audio-visual services for public affairs activities as requested by NUWC. Normally such events are arranged several weeks in advance and are scheduled during normal work hours; however, the Contractor shall accommodate such events if scheduled on short notice and/or outside of normal work hours.

1.2.2.6. The Contractor shall provide services for producing and editing programming material for broadcast on the information channel of AUTECH's Andros Island Closed-Circuit Cable Television system.

1.2.2.7. The Contractor shall provide a training, certification, and licensing program; issue appropriate licenses; and ensure that all personnel are qualified to perform their assigned tasks. The special equipment operator's license shall list the types of equipment the individual is qualified to operate. The Contractor shall maintain a record of this training, certification, and licensing received by each individual. Unqualified personnel shall not be permitted to operate equipment unless under qualified supervision, as part of the licensing program or upon written approval from the Government.

1.2.2.8. The Contractor shall maintain and operate document copiers and drawing plotting (electrostatic) equipment. No such equipment shall be added to, or deleted from, Government's inventory without specific approval from the Government.

1.2.2.9. The contractor shall maintain the AUTECH Technical Library.

1.2.2.10. The contractor shall provide qualified, AUTECH knowledgeable, Administrative Services personnel for the Navy Liaison Office (NLO), located at the American Embassy Nassau, Commonwealth of the Bahamas. Services shall entail coordination of official visits, obtaining necessary diplomatic clearances, arranging for provisions and accommodations, and providing briefings on Bahamian protocol and customs, as required.

1.2.2.11. The Contractor shall provide visitor services at Site 1. Services shall include such functions as arranging/coordinating: transportation; housing; supply/logistics; communications; as well as providing other administrative assistance as requested by the assigned Government Test Program Manager.

1.2.2.12. The Contractor shall provide clerical support services at Site 1 to help expedite the processing of incoming and outgoing mail for the U.S. Navy Post Office. Clerical support does not include the handling of stamps or money, or responsibility for mail.

1.2.2.13. The Contractor shall provide administrative services to the Navy Administrative Office at Site 1. Support is required for the central coordination of all Government administrative matters.

1.2.2.14. The Contractor shall provide travel services. These services will include manifesting on Contractor flights and rendezvous; verifying security clearances and issuing identification badges; arranging for transient quarters; and operating a Satellite Ticketing Office (SATO).

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1.2.2.15. The Contractor shall provide administrative services at the West Palm Beach facility. The contractor shall order and keep up-to-date charts; overlays; instructions; notices; and other literature and documents as requested by the Government; receiving, sending, and maintaining records of classified documents and other materials as well as registered and certified U.S. mail; maintaining courier authorization files and preparing courier authorization letters/transmittal forms for hand carry items. Preparing/packaging pre-sail briefings and other hand carry packages as requested by Government. Preparing and disseminating (mail/fax) visit requests/security clearances for Government Travelers. Copying, distributing, and filing all such requests.

1.2.2.16. The Contractor shall operate the Government's central filing system at AUTECH's West Palm Beach Headquarters following appropriate security guidelines for classification, identification, marking, and safeguarding documents/material as dictated by the subject matter.

1.2.2.17. The Contractor shall provide administrative services to support United Kingdom (UK) operations conducted at AUTECH. Clerical, logistic, and office administrative support shall be provided, both at Government's Site 1 on Andros Island and at the Cape Canaveral Air Force Station (CCAFS), FL, in office spaces assigned to the UK.

1.2.3. WORK LOAD FACTORS

1.2.3.1. Project Document support:

- ◆ An estimated average of 60 OCDs, averaging 30 pages each, are developed/revised each year
- ◆ An estimated yearly average of 10 APPs, averaging 20-pages each are prepared/revised
- ◆ An estimated average of 700 sheets of illustrating, and 180 engineering drawings averaging 5 sheets each are required yearly
- ◆ Estimated annual workload for other types of documentation are:
 - ◆ Requests for Document Change – 100;
 - ◆ Equipment Addition/Deletion Notices – 200;
 - ◆ Modification Proposals- 15;
 - ◆ Maintenance Repair Report Cards – 500;
 - ◆ West Palm Beach Burning - 50,000 sheets (size A through E);
 - ◆ Facilities (Andros) Xerox Type - 3,000 sheets (size A through E)

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1.2.3.2. Audio/Visual services shall operate during normal business hours on Andros Island five days per week (Monday through Friday). Extended hours are sometimes necessary, and emergency support must be available at all times. The annual estimated workload is as follows:

<u>Activity/Product Type</u>	<u>Estimated Annual Amount</u>
a. Completed Work Orders:	700
b. Range User Tests Supported:	30
c. Photo Production	
Exposures	4,000
Black and White Images	2,000
Color Images	10,000
Slides/Viewgraphs	1,500
Polaroid Pictures	600
Film Positives	400
d. Closed-Circuit Television:	
Programming	200 hrs
Computer Editing	200 hrs
e. Videotaping:	
Original Footage	150 hrs
Duplicated Footage	150 hrs
Editing	75 hrs
f. Audiotaping:	
Original Footage	25 hrs
Duplicated Footage	25 hrs
Editing	25 hrs

1.2.3.3. Estimate number of travel orders and associated lodging and rental car reservations is 80. SATO reservations are made for approximately 30 airline tickets per month.

1.2.3.4. Estimated amount of internal mail to/from AUTECH's WPB Headquarters:

Incoming: 900 lbs./month

Outgoing: 900 lbs./month

1.2.3.5. Three to twelve pre-sail packages are prepared monthly in accordance with the test schedule. Approximately 240 incoming security clearances and associated visit requests are received each month. The estimated amount of correspondence to/from AUTECH's WPB Headquarters which require distribution/mailing is: Incoming: 85 per month; Outgoing: 75 per month; and Customer Mailing: 35 per month. Estimated number of travel claims/vouchers to be completed, reviewed, and forwarded for payment/settlement is 80 per month. Estimated number of hours for Administrative/Secretarial typing (including power point presentations) support is 120 per month per position.

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1.2.3.6. Estimated average number of Government financial documents processed:

- | | |
|---------------------------------------|-----------|
| a. Obligations/invoices: | 350/month |
| b. Government travel orders/vouchers: | 200/month |
| c. Government time cards: | 40/weekly |
| d. Into-Plane fuel receipts: | 50/month |
| e. Aviation fuel receipts: | 100/month |
| f. Telephone invoices: | 9/month |

1.2.3.7. Approximately 350 reservation actions, (AUTEC aircraft/Andros transient housing) are expected each month.

1.2.3.8. Travel Coordinator and Secretarial services shall be available at AUTEC's West Palm Beach Headquarters during normal work hours. Range User Coordinator support function and USN Administration Office secretarial services at AUTEC's Site 1, shall be available during normal work hours, Monday through Friday except during periods of Range Maintenance/Range Stand-down. Occasionally support outside of normal working hours may be required. The Chapel Coordinator function is estimated to require one half workyear of effort, support to the Navy Liaison Officer is a full time position and Mail sorting at AUTEC's Site 1 post office is estimated to be a full time position.

1.2.3.9. UK support workload is estimated as follows:

- ◆ Clerical/office administrative services at Site 1 on Andros Island 80 hours per week during the times specified. The total of such support will not exceed three fourths (3/4) of a work year.
- ◆ Clerical/office administrative services at CCAFS, FL, will require one individual for approximately 120 days per year. Seven day work weeks and daily overtime may be necessary during UK operational periods.
- ◆ Logistic, caretaker, and resident site support at CCAFS will require one individual for approximately two thirds (2/3) of a work year.

1.2.4 PERSONNEL:

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel

1.2.5 GFP

Refer to Appendix 1.2.

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1.2.6 Performance Requirement Summary Table

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Timely, Accurate and Complete Administrative and Information Management Services	1.2.2	Occurrences of delays, errors and omissions in Business Operations are infrequent and minor in nature	Government assessment, audits, inspections; Contractor self-assessment; and Customer Feedback

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1.3 INFORMATION TECHNOLOGY

Information Technology (IT) encompasses all functions relative to Systems Management and Development required to sustain AUTECH in the performance of its mission for all hardware, software, Local and Wide Area Networks (LAN/WAN). To accomplish these functions the Contractor shall perform all the associated tasks typically associated with IT such as Administration, Corrective/Preventative Maintenance, Configuration Management, Helpdesk, Asset Planning, Monitoring, System Design, and Standards-based Planning.

AUTECH IT is divided into two major areas: One that supports real time and post test range operations and is collectively known as Range Data Systems (RDS), the other supports logistics and administration and is known as Information Systems (IS)), both systems process classified data.. Of these two systems, RDS is considered mission critical because it directly supports operations and is responsible for safety of the participants using the range.

AUTECH maintains a variety of IT systems that are required for normal operation of the range such as the Andros Network Operations Center, communications closets, computer rooms and Video Teleconference rooms for the Business, Test and Customer Operations.

The Government furnishes all components, hardware, software, network infrastructure and communications links, necessary to run IT.

This Performance Work Chapter is constructed based on the use of PeopleSoft ERP software system with Oracle v8.1 database.

1.3.1 APPLICABLE DOCUMENTS

1. DoD Web Site Administration Policies and Procedures.
2. Com NAVSEA Memo Ser 04IT3/123 - Information Service Security Policy and Procedures.
3. AUTECH ISSM.
4. DOD 8510.1-M Appendix 1.
5. Operating Policies for NUWC Det AUTECH Personal Computer Systems Processing Unclassified, Sensitive but Unclassified (SBU) & Classified Information.
6. TIA/EIA 568 and 569 standards documents.

1.3.2 REQUIREMENTS

1.3.2.1 Contractor shall maintain, and operate the IT Infrastructure and perform all tasks related to day-to-day IT operations and security.

1.3.2.2. Contractor shall establish and maintain a Government approved Configuration Management plan for the IT Infrastructure.

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1.3.2.3. Contractor shall establish and maintain the capability to recover any IT system quickly in the event of a system failure. Restoration of mission-critical IT systems and resources shall be accomplished within three hours. RDS Systems are required to be made operational within thirty minutes of system failure.

1.3.2.4. Contractor shall establish and maintain a database of hardware and software IT assets.

1.3.2.5. Contractor shall provide Software Engineering capability to support and create in-house systems as well as RDS systems. All developed systems shall be created using industry standards and best practices when possible.

1.3.2.6. Contractor shall re-allocate computers, peripherals and printers per operational test requirements or as personnel move.

1.3.2.7. Contractor shall establish and maintain a Government approved life cycle and allocation plan and formulate yearly budgets to support them.

1.3.2.8. Contractor shall maintain helpdesk client support services for WPB and ASD. Helpdesk shall include, but not be limited to: installation of new applications; upgrades of existing applications; patches, fixes, security updates; problem resolution for applications, computer hardware, peripherals, networking, telephones, pagers, etc.

1.3.2.9. Make the networks continually available except for scheduled outages approved by Government. Bandwidth allocation and other critical parameters shall be monitored and optimized. The vital statistics of all LAN and WAN links shall be monitored and logged.

1.3.2.10. Contractor shall perform IP address management, keeping a database of all assigned and private internet address space being used at AUTECH.

1.3.2.11. Contractor shall support new network equipment installation. This includes special test requirements, expansion or growth of IT systems and/or functions, and Operational Acceptance Testing (OAT).

1.3.2.12. Contractor shall perform engineering designs and maintain current set of engineering drawings for the LANs, WANs and Andros telecommunications cable plant. Drawings shall include high level views as well as detailed low level drawings. Each building shall have a set of drawings which will include the cabling system. Low level drawings shall include the telecommunications equipment, network servers and systems.

13. Contractor shall develop and maintain a five year plan for all IT, including hardware assets, software engineering projects, and technology advancements.

1.3.2.13. Contractor shall maintain and operate the VTC systems in WPB and on Andros. Each location, WPB and Andros, has one VTC conference room.

1.3.2.14. Contractor shall provide networking support for a Defense Message System (DMS) in WPB and on Andros.

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1.3.2.15. Contractor shall prepare certification and accreditation as directed by the Government Information Security Office (INFOSEC). Final accreditation approval resides with the Government Designated Approval Authority (DAA).

1.3.2.16. Contractor shall manage an Email content scanner and an Internet content scanner.

1.3.2.17. The Contractor shall provide web site support: maintaining the public AUTECH Internet website and maintaining the AUTECH Intranet website.

1.3.2.18. The Contractor shall adhere to the Government Information Assurance (IA) program for all AUTECH (including tenants and transients) communications and computer systems.

- a. Track and comply with all Information Assurance Vulnerability Alerts and Bulletins (IAVA and IAVB) notifications and implement the mitigation programs.
- b. Issue COMSEC operational codes, authenticators, and call signal lists.

1.3.2.19 The contractor shall maintain DOD/DON internet access for downloading the latest information and updates such as Advanced Change Notice, ACN's, and Problem Resolution Reports, and RPR's. Required web sites include Electronic Document Management System (EDMS), Naval Ordinance Safety and Security Activity (NOSSA), and Lightweight Information Desk On-line (LIDOL).

1.3.3 WORKLOAD FACTORS

1.3.3.1 AUTECH has 28 servers in WPB and 14 on ASD with approximately 700 computers inclusive. For IS, in most situations there are two of each server, one located in WPB and the other on Andros Island. For the Range Data Systems most servers are located on ASD. Refer to Appendix 1.3.

1.3.3.2 Oracle is the primary relational database engine used at AUTECH and resides on twelve servers. Microsoft SQL Server is used on four servers. Refer to Appendix 1.3.

1.3.3.3 Custom software in use at AUTECH includes applications developed in C, C++, C#, ASP, ASP.NET, JavaScript, Visual Basic, Quick Basic, Java, Cognos Powerhouse, VAX COBOL, HTML, and XML. Microsoft Visual Studio is the primary development tool for business applications. Refer to Appendix 1.3.

1.3.3.4 RDS systems require knowledge of C and UNIX. There are approximately 500K lines of code in approximately fifty applications used for real-time support. These applications are in various states of life cycle support. RDS operations require knowledge of Silicon Graphics IRIX operating system (from version 3.3.2 forward). There are approximately forty Personal Iris systems supporting real-time and post-time. There are also versions of HP-UX supporting two the SonoBuoy Tracking System workstations and two LATR systems, approximately ten Sun Solaris workstations supporting the Portable Tracking System and in-water tracking, and DEC VMS VAX supporting MK48 placement analysis. There are also approximately twenty PC's

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running Windows 2000 and XP that support real-time and post-test. Refer to Appendix 1.3 for systems.

1.3.3.5 A non-automated response to all helpdesk requests shall be made within one hour after receipt of request. There are typically 50 helpdesk requests per month for WPB and 85 helpdesk requests for ASD per month.

1.3.3.6 It is expected that three moves/additions/changes (MACs) shall be performed in WPB per month and eight MACs on ASD per month.

1.3.3.7 Due to life cycle maintenance, it is expected that three computers shall be replaced per month in WPB and eight per month on ASD. Twice/ year peaks may reach twenty computers for WPB and fifty computers for ASD during any month. On average, one network printer is installed, replaced, moved or maintained for WPB, and three printers on Andros per month.

1.3.3.8 There is an average of two new major IT Software Engineering projects running concurrently each year. In the past, these projects have required four to five staff members as developers and/or project managers, technical advisors, etc. In addition to major projects, there is an average of six to ten minor IT projects, requiring one or two people two months or less to complete. Most of these minor efforts involve updating software systems.

1.3.3.9 There are approximately 90 network laser printers, of which about 60 are on Andros and 30 in WPB.

1.3.3.10 There are approximately sixty sets of LAN/WAN network drawings with three drawing updates per month.

1.3.3.11 There are approximately two IT security measures per month that will require prompt mitigation and reporting. It is expected that mandatory action for mitigation requirements of vulnerability alerts may involve all servers ten times a year, all networked computers ten times per year, all network equipment twice a year, and all network printers twice a year.

1.3.3.12 Three TIA/EIA-568 and -569 engineering designs for new construction and renovations are typically performed per year.

1.3.4 Key Personnel

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

1.3.5 GFP

Refer to Appendix 1.3

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1.3.6 Performance Requirements Summary Table

Performance Objective	PWS Paragraph	Performance Expectation	Method of Assessment
Timely, accurate and complete Information Technology Services	1.3.2	Cost/scheduled variances are within agreed limits.	Contractor's assessment of meeting milestones and budget objectives, Government objectives and customer feedback
Reliable RDS and IT system operation	1.3.2	0% unplanned system outages, 100% data acquisition system availability. Minimum of five percent of service requests outstanding per reporting period (monthly).	Outage reports and customer feedback

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CHAPTER 2.0

TEST OPERATIONS

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2.0

This chapter of the PBSOW addresses Test Operations which includes all areas directly related to activities in support of range customers.

TEST OPERATIONS PERFORMANCE REQUIREMENTS SUMMARY TABLE

Performance Objective	SOW Chapter	Performance Expectation	Method of Assessment
Effective management of all Contractor Test Operations functions.	2.1 – 2.10	Personnel and resources are effectively utilized to achieve consistent internal and external customer satisfaction.	Monthly evaluation of the Contractor's performance data and customer feedback by the Government Test Operations Team Leader.

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2.1 TEST PLANNING AND CONDUCT

AUTEC's mission is directly tied to its ability to meet Range User test requirements in a thorough, innovative, professional, and cost-effective manner. Successful test execution requires that all personnel know and understand what must be done, and when and where their services are required. AUTEC customers are designated as "Range Users" regardless of whether their test or program is conducted on, or supported on, one of AUTEC's ranges, controlled Operational Areas, one of AUTEC's land-based sites or facilities, in the open ocean, or elsewhere.

Planning for routine test operations normally begins with the creation of the AUTEC Quarterly Test Schedule resulting from the quarterly COMLANTFLT Scheduling Conference, inputs from Type Commanders, and Government test requirements. The AUTEC Quarterly Test Schedule and related test Work Orders are provided by NUWC approximately one month prior to the beginning of each quarter.

Once promulgated, test schedules fluctuate for numerous reasons. Fleet operating tempo, commitment or priority changes, etc., all affect AUTEC's Quarterly Test Schedule. Such changes may be expected daily, and may change actual test requirements. Test Planning must be flexible and responsive to all such revisions. Emergent tests may be added to the schedule with less than four weeks notice.

A NUWCDETAUTEC Test Program Manager (PM) is assigned as the primary point of contact for each prospective/actual Range User. Once Range User requirements are defined and approved, the assigned Test Program Manager coordinates these requirements with the Contractor's assigned Test Planning personnel.

A NUWC Work Order constitutes the formal request by Government for the Contractor to support a specific test operation. A Contractor generated Operations Directive (OD) describes test requirements that occur during a specific time period. An OD may include more than one work order and more than one Test Plan.

Contractor generated Test Plans are prepared for tests/programs of an on-going or repetitive nature. In addition there are unique Range User generated Test Plans. All Test plans are numbered for reference purposes, and retained on file for redistribution when required. Test Plans contain much the same information as an individual OD, with the exception of specific dates, times, etc.

Tests conducted on AUTEC's instrumented ranges are controlled and directed from the Command Control Building (CCB) at Site 1 on Andros Island. Track data is collected from in-water and in-air instrumentation systems. Using track information, the movement of participating and non-participating units is monitored and used for the production of data products. Test participant movements may be directed in order to assure that test objectives are met in a safe, timely, and efficient manner. The instrumented ranges include the Deep Water Weapons Range (North and South), Naval Forces Weapon and Sensor Accuracy Check Site

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(FORACS) Range, Acoustics Range, and AUTECH Minefield and Shallow Water Range (AMSWR).

AUTECH's Operations Control Center, located in the CCB at Site 1 on Andros Island, provides a focal point for the coordination of all of AUTECH's range activities, rendezvous and range logistic support, emergent situations, and the movement of vessels and aircraft. Personnel in the Operations Control Center complement the efforts of personnel in the Real Time Display Center(s) during test operations. Whether or not test operations are being conducted, AUTECH operates an around-the-clock Operations Control Center (OCC).

Test Operations conducted on AUTECH's Weapons Range and AMSWR are monitored and controlled from Real Time Display Centers (RTDCs), where in-water and in-air track data is displayed. Two RTDCs are located in the CCB at Site 1 on Andros Island, and may be run concurrently. A small display center, RTDC No. 3, connected via real-time data link, is remotely located in the CCB for AMSWR, ESM, AS3, and MLST3 tests. RTDCs are equipped with communications equipment, as well as with various workstations and large screen displays driven by the Host Computer System(s). These workstations are used by the Contractor's Test Conductors and Controllers, the U.S. Navy Range Safety Watch Officer, and the Assistant Range Safety Officer (ARSO), to monitor/control real-time test events. All displays are integrated with AUTECH's classified Network for optimum flexibility in both real-time and post-test data display, recording, and processing. Real-time data can also be linked to various Range User facilities in CONUS.

In addition to testing on-range, AUTECH conducts instrumented tests on several configurations of portable tracking systems including PTS, BARTS, and portable LATR, as well as mobile FORACS.

Range workload is defined in terms of Range Test Hours. Range Test Hours encompass those periods of time, commencing when AUTECH is manned and ready, during which track data is acquired in support of an on-range test using any combination of in-water/in-air instrumentation systems. During a single clock hour, one or more on-range tests may be conducted. Range Test Hours are accumulated separately for each individual test. Range Test Hours include the time from manned and ready (nominally one hour prior to COMEX) until equipment is secured subsequent to a test, but do not include the time required for pre-test calibration/check-out.

The Scheduling and Planning processes are given in Process Chart included in Appendix 2.1.

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2.1.1. APPLICABLE DOCUMENTS:

Applicable Operational Control Directives to be separately listed in Attachment XXXX.

NUWCDIVNPTNST 5100.6 (SERIES); (C) FXP-1 (C) AXP-1 (U)	AUTEC Range Safety Manual Chpt 3, Figures C-2, C-4, C-8, and C-9 Chap 2, Table 3-1, 3-2, 3-3 and Chap 5
(C) COMSUBLANT OPORD 2000 (U)	Annex B, Annex C
(C) OPNAVINST C8510.12 (Series) (U)	All
(C) OPNAVINST C8510.13 (Series) (U)	All
(C) OPNAVINST C8510.15 (Series) (U)	All
COMSUBLANT OPLAN 2137	Annex C
(C) COMNAVSEASYS COM Ltr Ser 63T2/112 of 15 Jul 87 (U)	All
(C) COMSUBLANT OPORD 2148 (U)	Annex C, Annex K
(C) COMSUBLANT OPORD 2184 (U)	Annex C, Annex K
(C) COMSUBLANT OPORD 2128 (U)	Annex C, Annex K
(U) COMLANTFLTINST 3120.26 (U)	Sec 1, 2, 3, 4, and 22

2.1.2. REQUIREMENTS

2.1.2.1 The Contractor shall provide test operations planning, range & asset scheduling, test conduct, and operations control support services in accordance with the AUTEC Test Schedule and requirements contained in Work Orders.

2.1.2.2 The Contractor shall develop, maintain, and promulgate the AUTEC Schedule of Operations and the Quarterly Scheduling message in Naval message format as approved by Government. The schedule shall be updated as needed to reflect on-going changes in Range User schedules/requirements, as provided by the Government. The Contractor shall be responsive to real-time test delays, problems, equipment failures, schedule changes and changes in Range User test/test support requirements. Near real-time changes to the AUTEC Schedule of Operations shall be processed through Operations Control Center on Andros Island.

2.1.2.3 The Contractor shall provide planning, asset management, personnel scheduling, and execution of all tests/programs. The Contractor shall provide a single point of contact per Work Order for these tasks. The Contractor shall provide continuity from the preliminary planning meeting with Range Users, through the OD period, pre-test briefs, test conduct, post-test brief and to the completion of that Range User's Work Order.

2.1.2.4 The Contractor shall determine the best method(s) for accomplishing all aspects of each test/program. As part of the pre-test planning and preparation task, Contractor personnel shall be required to attend and participate in technical meetings, planning conferences, and pre-sail briefings at worldwide locations. They shall be responsible for matching test support, data

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collection, data processing, and data analysis requirements with existing AUTECH capabilities in order to satisfy specific customer needs, or of defining new capabilities or additional resources.

2.1.2.5 The Contractor shall prepare, update and electronically distribute an unclassified Operations Directive (OD) on the AUTECH Local Area Network (LAN). The OD shall contain everything necessary to develop plans for execution of the scheduled test(s). The OD shall contain detailed information describing the test objective(s); security classification(s); technical test procedures; run geometries (if appropriate); governing/reference documents; data gathering, processing, and product distribution requirements; facilities, assets, and personnel support needed; finite time schedules; communications; logistics support; environmental mitigation; and explosive safety information.

2.1.2.6 The Contractor shall develop and maintain Test Plans for on-going or long-term test programs. Each time a test is scheduled, the appropriate Test Plan shall be referenced, appropriate information extracted, and specific test requirements incorporated in the requisite OD. Contractor generated Test Plans shall be located and available on the AUTECH LAN.

2.1.2.7 Test Planners shall hold pretest briefings for all participants to ensure that no aspect of the OD period has been overlooked in the planning process, and that no requirements are misunderstood. As required, Post-test critiques shall be held to assess the success of their test.

2.1.2.8 The Contractor shall arrange and coordinate all pre and post-test logistic support functions specified by the OD; submit and track Purchase Requisitions/Orders; arrange for: any necessary shore facility or other test asset preparation/modification; the proper staging of any Range User materials/equipment shipped to AUTECH, at the specified test site; the proper handling, accounting, and disposal of any HAZMAT/HAZWASTE. Upon test/program completion, ensure all Range User materials/equipment are returned and that all AUTECH assets/facilities are restored to their original condition, unless otherwise directed by Government. Test Planning representation is required in CONUS cities/ports in support of test preparations.

2.1.2.9 The Contractor shall operate real-time in-air and in-water range tracking systems as required by the OD.

2.1.2.10 The Contractor shall assure that tests are not affected by non-participant AUTECH vessel and aircraft movements, and AUTECH RF emissions.

2.1.2.11 The Contractor shall collect data and maintain records of exercise weapons, test vehicles, or mobile targets lost/sunk during range operations, and their subsequent recovery.

2.1.2.12 The Contractor shall prepare and submit a Test Summary Report at the conclusion of each test.

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2.1.2.13 The Contractor shall provide a Test Conductor for tests conducted in RTDC #1, #2, & #3. The test conductor shall direct real time operations as well as perform test preparation support.

2.1.2.14 The Contractor shall provide an Assistant Range Safety Officer (ARSO) and a Deputy Assistant Range Safety Officer (DARSO) to function as adjunct positions to the Navy Range Safety Officer and Navy Range Safety Watch Officers. The ARSO and DARSO shall be qualified as Test Conductors.

2.1.3. WORKLOAD FACTORS

2.1.3.1 Total Range Test Hours (RTH): Approximately 3,500/year. Refer to Appendix 2.1 for chart presenting typical Range Test Hour distribution.

2.1.3.2 ODs shall be distributed a minimum of four weeks in advance of the test start date.

2.1.3.3 AUTECH's support of customer range test operations is scheduled Sunday through Saturday (holidays included), 46 weeks per year. Testing occurs on approximately 50% of the Saturday/Sundays.

2.1.3.4 Prior to commencing a range operations period, pre-test calibration/check-out of range instrumentation systems is required only for the primary RTDC, with the exception of concurrent AMSWR tests operated from RTDC #3 (see Chapter 2.3.3.4.). These functions take up to one hour prior to manned and ready. Upon completion of operations, range instrumentation systems must be secured. These post-test functions require approximately up to one hour.

2.1.3.5 Real-Time Display Center (RTDC) Operations

2.1.3.5.1 One RTDC is required for each concurrent test on range.

2.1.3.5.2 150-600 RTH typically occur during a 30-day period.

2.1.3.5.3 During periods of average operations tempo, test operations support shall be required for one RTDC for up to 24 RTH per day, or two RTDCs simultaneously, one RTDC for up to 15 contiguous RTH and the second RTDC for up to 12 contiguous RTH per day. For AMSWR tests concurrent with tests in either RTDC #1 or #2, the 12 RTH hours period includes the pre-test calibration/check-out and post-test period.

2.1.3.5.4 Peak test operations periods, which require additional RTDC support for up to fifteen days at a time, are estimated to occur six times per year. Such peak operations periods may require use of one RTDC for up to 24 RTH per day, plus a simultaneous requirement for support of a second RTDC for up to 12 RTH per day, for all or most of the days involved.

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2.1.3.5.5 Periods of peak operations workload will be identified and scheduled at least 45 days in advance of the requirement.

2.1.3.5.6 Range event duration: The time duration of any one test on range, from COMEX to FINIX, is typically as follows:

<u>Range Test Hours</u>	<u>Avg. % of All Tests</u>
0 to 6	73
6 to 14	21
>14	6

2.1.3.6 Primary Test Types:

2.1.3.6.1 ASW tactical evaluations and training exercises are conducted by various Fleet platforms (submarine, surface ship, helo or fixed-wing aircraft). The number of test scenarios scheduled for any test platform(s) is dependent on the number of weapons, or type of test, being conducted. Workload estimates are as follows:

2.1.3.6.1.1 Submarine MK-48 Certifications/Proficiencies/Command qualifications: An average of 50 tests (12 RTH per test) shall be conducted per year. Typically six MK-48 EXTORPS per participant are launched.

2.1.3.6.1.2 Submarine weapon tactical development exercises involving the launch of Mk-48 and/or UK Spearfish torpedoes will typically involve 5 exercise per year.

2.1.3.6.1.3 Submarine Prospective Commanding Officer (PCO) Exercises: Typically two exercises per year involving multiple submarine, surface ship and air participants lasting approximately 14 days over two phases. An estimated 70 MK-48 torpedoes will be launched over the two phases. Additionally, during the second phase, typically 15 MK46/50/54 torpedoes will be launched.

2.1.3.6.1.4 Surface ship ASW Training Exercises (MK-46 EXTORP/REXTORP, MK-50 EXTORP/REXTORP, MK-54 EXTORP, UK STRINGRAY Torpedoes): Typically six exercises per year, each consisting of 50 RTH.

2.1.3.6.1.5 Helo ASW TORPEX Exercises (MK-46 EXTORP/REXTORP, MK-50 EXTORP/REXTORP, UK STINGRAY Torpedoes): Typically 11 Helo deployments per year, consisting of 60 RTH.

2.1.3.6.1.6 Fixed-Wing ASW TORPEX Exercises (MK-46 EXTORP/REXTORP, MK-50 EXTORP/REXTORP, UK STINGRAY Torpedoes): An average of 250 events per year, typically consisting of 3 RTH per event.

2.1.3.6.1.7 Armed Helicopter Exercises: Typically 8 deployments (typically ten 12 hour range days per deployment) are conducted each year. Deployments may involve use of laser targeting and/or live fire of inert warhead AGM-114B Hellfire missiles.

2.1.3.6.2 Development/Evaluation Testing: Developmental/Evaluation testing of weapons/combats systems and component subsystems and other devices usually employ

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restricted geometries, and thus are rigorously controlled events. An average of 30 tests (typically three 8 hour periods per test) shall be conducted each year.

2.1.3.6.3 Mine Avoidance Exercises: Forty, 5 hours tracking periods typical duration each per year, are estimated to be conducted on AUTEK Minefield and Shallow Water Range (AMSWR).

2.1.3.6.4 Sensor Measurement Tests:

2.1.3.6.4.1 See Paragraph 2.3.3.17/.25 for typical FORACS test types and duration.

2.1.3.6.4.2 16 Surface Ship/Helicopter FORACS Range tests are conducted each year on the FORACS Range; typically 1 to 2 tests per month. Peak months may have three FORACS Range tests. 10 Submarine Sensor Accuracy FORACS tests are conducted each year on the Deep Water Tracking Range.

2.1.3.6.4.3 Weapon System Accuracy Trials (WSATs)/Combat System Ship Qualification Trials (CSSQTs) include Sensor Accuracy Tests and the launching of weapons (MK48/MK48 ADCAP EXTORP, MK50 EXTORP/REXTORP, MK46 EXTORP/REXTORP), MK-54 EXTORP. Typically 1 WSAT/CSSQT is conducted each year.

2.1.3.6.5 Acoustic Testing:

2.1.3.6.5.1 See Paragraph 2.3.3.14/.15 for Acoustics typical test types and duration. Acoustic test support typically requires 25 Surface Ship Radiated Noise Measurement (SSRNM) trials per year, grouped with 3 to 6 surface ships at one test period. The PMS/PSMS systems typically operate 20-30 test days per year.

2.1.3.6.6 Off-range:

2.1.3.6.6.1 Open-ocean testing typical requires 3-30 days, normally for the purpose of supporting towed array, sonar, or weapons testing, or general oceanographic research. Occasionally such tests can last up to three months, and may require two vessels. An average of 2 Open-ocean tests per year are scheduled. No standard Test Plan applies to Open-ocean testing.

2.1.3.6.6.2 Off-range test sites include areas off Key West and Ft. Pierce, FL, and in the Berry Islands, BA. Typical test duration is 3-7 days. Though support requirements vary depending on the type of test, tracking systems are usually involved, and marine/helo support platforms required to conduct off-range tests. These sites are normally used to support weapons and sonar systems testing. An average of four Off-range tests per year are scheduled using components of PTS, or of other instrumentation systems. No standard Test Plan applies to off-range testing.

2.1.3.6.7 Maintenance/daily updating of the AUTEK Schedule of Operations, and general scheduling-office support, shall be performed during the 8 hour business day at AUTEK's West Palm Beach Headquarters.

2.1.3.6.8 The Operations Control Center on Andros Island shall be staffed 24/7, 52 weeks per year.

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2.1.3.6.9 Pre-test planning may require travel to locations other than West Palm Beach, FL, or Andros Island. Two to four, two-day trips per month for one Test Planner each is estimated to various ports or facilities in the U.S. and Canada. One to two trips per year to England, of one week duration for two Test Planners, are estimated for United Kingdom (UK) trials planning sessions.

2.1.4. PERSONNEL

Refer to Attachment#3 for Personnel Qualification Sheets for required and recommended personnel.

2.1.5. GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 2.1

2.1.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Quality Test planning and conduct.	2.1.2	Test planning and conduct meet 100% of customer's test requirements.	Government evaluation of Contractor's performance data; contractor's self assessment; and customer feedback.

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2.2 DATA PROCESSING AND ANALYSIS

Data Processing and Analysis encompasses the disciplines of real-time computer operation; archival/management/utilization of real-time data in the Real-Time Display Centers; data reduction and analysis that produce customer data products, and packaging/ delivery of data products. It also encompasses data reduction and analysis tasks associated with activities such as certifying that the Weapons Range systems are performing as they should. All responsibilities of this chapter require the application and operation of IT resources. Maintenance and life cycle management of these IT resources are addressed in Chapter 1.3.

Weapons Range Data Processing begins at the input side of AUTECH Host Computer System (see Chapter 1.3), where all range tracking instrumentation data is brought together. It then gets filtered, more extensively processed, and archived before it is made available for real-time displays, or for post-test processing and analysis. However, the resources available for data reduction and analysis (see Chapter 1.3) may also support FORACS, Acoustic Testing, AMSWR and programs conducted in the open ocean, or at other remote locations. The majority of IT resources utilized for data processing and analysis exist on AUTECH's classified Local and Wide Area Networks (LAN/WAN), though use of AUTECH's unclassified LAN/WAN is also required.

Periodic calibration and tracking accuracy verification tests of AUTECH's existing instrumentation systems is required. The Contractor participates in the integration of new/modified systems during Operational Acceptance Tests (OATs), often writing detailed reports describing the new/modified system's capabilities and limitations.

The three key products and services of this chapter are: real-time computer operations, data products for customers, and accuracy certification of AUTECH's overall tracking and data quality. A representative Process Flow Chart is depicted in Appendix 2.2.

2.2.1. APPLICABLE DOCUMENTS:

COMSUBLANT/COMSUBPACINST C8510.1 (series): Torpedo MK48 Scoring Criteria and Quick-Look Reporting (U)

2.2.2. REQUIREMENTS:

2.2.2.1 The Contractor shall provide Data Processing and Analysis services based on the requirements projected in the AUTECH Schedule of Operations, ODs, and Work Orders issued.

2.2.2.2 The Contractor shall operate various types of computer hardware and software described in Chapter 1.3 to execute all the functions of data display, data processing and analysis, including managing the data in the RTDC whenever a test or operation is scheduled on AUTECH's Deep Water Tracking Range.

2.2.2.3 The Contractor shall perform post-test analysis, data reduction, data production, and delivery of finished data products to designated recipients.

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2.2.2.4 The Contractor shall perform data extraction, merging, and analysis for all Fleet MK48 exercise torpedo and all other firings (e.g., tactical development) as required by the test OD. This function requires pre-test, real-time, and post-test coordination with Fleet personnel; merging of shipboard and AUTEC tracking data; evaluation of torpedo internal data; error analysis of each firing event; and preparation of a formal report in Naval message format.

2.2.2.5 The Contractor shall develop and conduct independent periodic calibration and tracking accuracy verification tests. See Appendix 2.2 for the description of these required tests. Other instrumentation performance testing may be requested by NUWC, should anomalous tracking problems present themselves. The Contractor shall perform analysis of data acquired during the aforementioned tests/measurements for the presence of anomalies and trends. Such analysis, conclusions, and the proposal of requisite problem solutions are reported to NUWC and other relevant Contractor personnel in a timely manner to continue scheduled operations.

2.2.2.6 The Contractor shall maintain AUTEC's Range Constants Manual (classified as FOUO) and interface with the National Imagery and Mapping Agency (NIMA) as required for accurate geodetic benchmarks, new/existing shore-based instrumentation systems, and offshore structures. The Contractor shall provide data and equipment set-up services to NIMA.

2.2.2.7 The Contractor shall develop appropriate test scenarios and conduct OATs for all new or modified test support instrumentation systems, as approved by the Government.

2.2.2.8 The Contractor shall maintain a library of all archived test data for the previous six-month period, or longer when specifically requested by a customer.

2.2.2.9 The Contractor shall perform special system and data analysis studies, data comparisons, report preparations, etc., as may be tasked by the Government.

2.2.3. WORKLOAD FACTORS

2.2.3.1 Contractor shall provide services to receive, package and distribute data products during hours of scheduled range operations which are estimated to range between 60 to 80 hours per week. A Data Package consists of multiple Data Items.

2.2.3.2 Total Data Items may vary from 600 to 1600 per month, averaging 1200/mo.

2.2.3.3 Total Data Packages may vary from 70 to 160 per month, averaging 108/mo.

2.2.3.4 Complete analysis of 45 MK48 Fleet exercises (typically five torpedo firings each) per year is typically required with final reports due 48 hours after the exercise completes.

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2.2.3.5 Abbreviated MK48 analysis processes typically occur four to six times a year requiring two-thirds of the normal analysis effort, but with more torpedoes than the Fleet exercises. For example, Prospective Commanding Officer (PCO) exercises may have approximately seventy torpedoes during a two-to-three-week period, but other non-Fleet exercises may have as few as five or six. These exercises may be sequential to, but not concurrent, with the Fleet exercises.

2.2.3.6 The Contractor shall provide systems analysis-related functions that include:

2.2.3.6.1 Range Recertification and other periodic tests, (see Appendix 2.2)

2.2.3.6.2 It is estimated that three OATs will occur each year, and may occur concurrently.

2.2.3.6.3 It is estimated that up to six NIMA survey visits will occur each year.

2.2.3.6.4 The RCM shall be updated after each NIMA visit, and typically twice per year otherwise.

2.2.3.6.5 It is estimated that six technical Emergent Range data quality investigations/reports (other than those of Appendix 2.2) will occur annually.

2.2.4. PERSONNEL

Personnel: Refer to Attachment#3 for Personnel Qualification Sheets for required and recommended personnel.

2.2.5. GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 2.2

2.2.6. PERFORMANCE REQUIREMENT SUMMARY TABLE

Performance Objective	PWS Paragraph	Performance Expectation	Method of Assessment
Quality Data Products	All	Error free, on-time data items, packages, reports	Government Evaluation of Contractor provided performance data plus customer feedback

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2.3. RANGE TEST SYSTEMS

This chapter specifies the scope and requirements of the AUTECH test systems including the: deep-water tracking, in-air tracking, minefield and shallow water tracking, Portable Tracking System (PTS), simulation/stimulation, acoustic testing and environmental measurements, NATO FORACS AUTECH (NFA), and communications systems.

The Deep-water tracking system at AUTECH is designed to acquire and display three-dimensional position and time data (TSPI data) for various objects during ASW tactical exercises and technical/operational evaluations of developmental ASW systems. Targets tracked may include: surface ships; submarines; exercise weapons; targets; sonobuoys; and aircraft.

A variety of augmented (GPS, transponders, etc) and un-augmented systems comprise the in-air tracking function at AUTECH. Depending on requirements, the in-air tracking of surface and airborne platforms is typically accomplished with any, or a combination, of the following systems:

- Multi-Mission Surveillance Radar (MMSR)
- Large Area Tracking Range (LATR)
- Sonobuoy Tracking System (STS)
- Ashtech Carrier Phase Differential GPS

The MMSR is a S-band surveillance Air Traffic Control (ATC) Radar system used to detect and track non-instrumented on-range surface and airborne objects and provide a Range Safety display during scheduled range exercises.

AUTECH's Minefield and Shallow Water Range (AMSWR) provides both a fixed and a mobile underwater/in-air instrumented TSPI tracking range capability in relatively shallow ocean depths from 100 to 2000 feet. AMSWR is capable of TSPI tracking in real-time: torpedoes; mobile targets; submarines; Unmanned Underwater Vehicles (UUVs); Submarine Launched Mobile Mines (SLMMs); surface ships; and Antisubmarine Warfare (ASW) fixed and rotary wing aircraft. Adjacent to the fixed tracking hydrophones, are (inert) minefield(s) to provide mine avoidance/detection training for Fleet sonar operators, and to support Test and Evaluation (T&E) of mine detection/classification systems.

The PTS is a portable in-water/in-air tracking system consisting of the following subcomponents: PTS/LATR hardware, BARTS, and PROC containing the ADPS along with a storage/workshop container.

In addition to the above Range Test Systems, the Electronic Support Measurement (ESM) system is a suite of simulation hardware used to simulate threat radar, and the Advanced Sonobuoy Simulation System (AS3) simulates the acoustic response of sonobuoys. The MLST3 system provides stimulation of on-board C4I systems and detection and isolation of communication system errors. Generally, AUTECH's Deep Water Tracking Range TSPI systems are used in conjunction with these systems.

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Acoustic Testing consists of signature measurements for devices such as surface ships/vessels, submarines, torpedoes, autonomous or unmanned underwater vehicles (AUV/UUV), remotely operated vehicles (ROV), buoyantly propelled test vehicles, acoustic countermeasures, and sonar systems. AUTECH has both a portable and fixed array SSRNM system. AUTECH has a variety of portable acoustic measurement/monitoring systems that include:

- The Portable Measurement System (PMS)
- The Portable Sonobuoy Measurement System (PSMS)
- Deployable Noise Measurement (DNM) system

Environmental measurements conducted at AUTECH consist of ambient data collection using the acoustic testing systems listed above. In addition, Temperature versus Depth (XBT), Conductivity/Temperature/Depth (CTD), and Acoustic Doppler Current Profiler (ADCP) measurements are often made in order to characterize the AUTECH environment. Additionally, a self-contained weather station is located at Site 1.

The Deployable Noise Measuring system (DNM) is utilized for acquiring and analyzing underwater radiated noise from test platforms. The DNM System is normally maintained at Site 1 and is used to support tests in the TOTO area. However, it is possible to transport and utilize the system at remote locations.

The NATO Naval Forces Weapon and Sensor Accuracy Check Site (FORACS) Program whose primary mission is to conduct combat system-related Sensor Accuracy Tests (SATs). These tests measure the accuracy of target localization and on-board navigation sensors via the TSPI tracking of test platforms. Appendix 2.3 contains a list and description of the FORACS subsystems.

To conduct test at AUTECH, reliable communications between AUTECH, West Palm Beach, facilities on Andros Island, Andros Island sites, AUTECH's range craft, and with units operating on the various Andros Ranges are required. A Message Center and numerous voice/data RF and cabled communications systems are maintained for range tests and to provide administrative services to AUTECH.

Appendix 2.3 provides representative Process Flow diagrams.

2.3.1. APPLICABLE DOCUMENTS

- COMNAVSEASYS COM (TM59093-AA-PRO-XXX/ASW STP (Series)
- NAVSEA OD 40087, Supplement 3; ASW Weapon System Accuracy Trials Program for Surface Ships, Sensor Accuracy Test Program
- NAVSEA OD 43690, Supplement 3; ASW Weapon System Accuracy Trials Program for Submarines, Sensor Accuracy Test Program
- NAVSEA OD 41774 Accuracy Standards Manual , VOLS 1&2, ASW Sensor Equipment (Classified document)

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- NCCOSC FORACS Operations and Maintenance Manual, RDFTS for FORACS
- NFO/D(77)1; NATO FORACS Standing Instructions
- Director, Navy International Programs Office ltr 5510, Ser 33/44000916, dtd 25 May 1994
- Allied FORACS Publication (AFP)-1, NATO FORACS Range User's Guide Volume 1
- Allied FORACS Publication (AFP)-2, GUIDELINES FOR THE INTERPRETAION OF NATO FORACS REPORTS
- SECNAVINST 5239.2 (Series), Department of the Navy Automated Information Systems (AIS) Security Program
- OPNAVINST 2221.3 (Series), Communications Security (COMSEC) Equipment Maintenance and Training
- OPNAVINST 2221.5 (Series), Release of Communications Security Material to U.S. Industrial Firms Under Contract to the U.S. Navy
- OPNAVINST 2400.7 (Series), Frequency Usage Report
- OPNAVINST 2400.20 (Series), Navy Management of the Radio Frequency Spectrum
- OPNAVINST C 5510.93 (Series), Navy Implementation of National Policy on Control of Compromising Emanations (U)
- COMNAVCOMTELCOMINS 2010.4 (Series), Naval Telecommunications System (NTS) Automated System Interface, Software Control and Management Procedures
- Dept. of the Navy (DoN) Publication CMS-21, CMS Policy and Procedures for Navy Tier 2 Electronic Key Management System

2.3.2. REQUIREMENTS

2.3.2.1 The Contractor shall maintain all of AUTECH's Range Test Systems and equipment in an operational status except during scheduled range maintenance periods authorized by NUWC. All Range Test Systems equipment will be manned and operated in accordance with the AUTECH Schedule of Operations.

2.3.2.2 The Contractor shall prepare/maintain OCDs, Operating Maintenance Instructions (OMIs), and operation manuals provided by equipment manufacturers as guidance and technical sources for the Contractor to maintain, check-out, calibrate, and operate all of AUTECH's Range Test System.

2.3.2.3 The Contractor shall perform new equipment installation, integration, and Operational Acceptance Testing.

2.3.2.4 The Contractor shall Investigate reliability, maintainability and/or performance problems with existing equipment and provide recommendations to the Government.

2.3.2.5 The Contractor shall provide support to Systems Analysis and related Government departments for Operational Acceptance Testing or other equipment test and analysis.

2.3.2.6 The Contractor shall take periodic calibration measurements on the Deep-water and AMSWR underwater tracking systems to insure that the system is operating within specification.

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2.3.2.7 The Contractor shall be responsible for tracking in-water targets, setting threshold levels and operating the DSP systems according to the AUTECH Schedule of Range Operations. The Contractor shall also select bi-directional nodes or UQC's for underwater communications.

2.3.2.8 The Contractor shall conduct the tracking and/or surveillance of surface and airborne objects on the AUTECH Ranges using MMRS, STS, GPS, and/or LATR, according to the AUTECH Schedule of Range Operations.

2.3.2.9 The Contractor shall operate and maintain all AMSWR/PTS computer/network systems and equipment.

2.3.2.10 The Contractor is responsible for the deployment and recovery of the BARTS in accordance with GFI and for preventative maintenance such as quarterly discharge and recharge of all battery systems. The Contractor is not responsible for the deployment and recovery of the PTS.

2.3.2.11 The Contractor shall run scripted ESM, AS3 and MLST3 operational scenarios and manually generating individual emitters. Logs will be kept during manual operations.

2.3.2.12 The Contractor shall perform cryptographic keying and transport of cryptographic material.

2.3.2.13 The Contractor is responsible for the production and delivery, to designated recipients, of finished acoustic data products of professional quality in a timely manner.

2.3.2.14 The Contractor shall maintain a library of archived acoustic test data consisting of test-specific software, raw data, data plots, electronic media, deliverables, etc. Procedures shall be in place for inventory and periodic purging of the data. The destruction of data is coordinated with the Government.

2.3.2.15 The Contractor shall conduct General SAT Testing, Surface Ship SAT Testing, Helicopter Testing, and Mobile FORACS Testing. Details of these tests are provided in Appendix 2.3.

2.3.2.16 The Contractor shall perform post-test FORACS data processing and preparation, quality assurance, and distribution. Government approval is required for both Sensor Accuracy Test preliminary (quick look) messages and final reports.

2.3.2.17 The Contractor shall be responsible for following appropriate security guidelines for classification, identification, marking, and safeguarding of classified SAT/FORACS Range resources, etc. as dictated by the subject matter. Specific guidelines relating to information that may be shared or disclosed in conjunction with AUTECH's NATO FORACS affiliation as provided in Director, Navy International Programs Office.

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2.3.2.18 The Contractor shall maintain and operate communications subsystems as described in Appendix 2.3.

2.3.2.19 The Contractor shall perform secret-nomenclature COMSEC equipment installation, maintenance, and repair functions. Personnel who are so assigned must meet the NSA/CSS-approved training requirements specified by OPNAVINST 2221.3 (Series), and enclosure (1) thereto. The Contractor shall complete, and maintain a record of all COMSEC maintenance courses completed by each individual. The Government is the interface for all equipment controlled by the Electronic Key Management System (EKMS).

2.3.2.20 The Contractor shall provide communications engineering expertise to Range Users in the preliminary stage of test planning to make best use of AUTECS's communications systems capabilities.

2.3.2.21 The Contractor shall provide communications system integration, system modification, fault isolation, alignment/calibration, and special studies.

2.3.2.22 The Contractor shall provide logistic support for shipboard FORACS test equipment from West Palm Beach, or Andros, to the test vessel.

2.3.2.23 The Contractor shall maintain a color coded NFA operational systems block diagram designating each system.

2.3.2.24 The Contractor shall maintain a color coded NFA major system/equipment life cycle diagram depicting a fading bar designating each system/equipments 5 yr history and 5 year future projection.

2.3.2.25 The contractor shall conduct pretest preparations such as system/array configuration, system calibration, system load-out, and at-sea system checks.

2.3.2.26 For acoustic tests requiring the DNM System, the contractor shall perform the following functions onboard the DNM deployment platform:

- ◆ pretest system modifications required to meet special customer needs
- ◆ monitor track displays, maintain a Test Conductor's Log for test events and operate strip chart recorders
- ◆ operate the RTAS and transfer data to the PPS
- ◆ perform filtering/amplification/attenuation of acoustic signals prior to the acquisition by RTAS and back up data on digital tape
- ◆ operate the LOFAR system for each event
- ◆ conduct the near real-time and/or posttest processing of acoustic data
- ◆ Operate the Shipboard Quiet Inverter System

2.3.2.27 The Contractor shall operate and maintain all PMS/PSMS/CTD/ADCP acoustic systems and equipment.

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2.3.3 WORLOAD FACTORS

2.3.3.1 The Weapons Range deep-water tracking and underwater communication system is required to be operational per the Range Schedule of Operations.

2.3.3.2 The Deep-water System Engineer shall take calibration measurements on the underwater tracking system at weekly intervals. The gathering and analysis of this data normally takes 2 – 6 hours per week.

2.3.3.3 The MMSR is typically operated continuously except for scheduled maintenance and range downtime periods.

2.3.3.4 Operation of the fixed (Site 1 and 2) LATR system will average 100 – 200 test hours per month.

2.3.3.5 LATR requires minimal operator intervention once system track has been initialized.

2.3.3.6 STS is operated an average of 60 data acquisition hours per month and is primarily used to support scheduled ASW exercises. During peak months a usage of approximately 100 hours will be typical. Operational test support requires no operators at the downrange sites and the system is operated from a single operator control console at Site 1. After initialization of the STS system operation, no operator is required.

2.3.3.7 The Ashtech GPS is operated during approximately 3 periods of scheduled RDT&E type exercises per year. Each of the 3 periods will last approximately one week and each week will average 40 hours of data acquisition. It is also utilized during routine range rectification tests conducted to measure and verify range system performance standards. The system is operated by a single operator and requires no operator intervention once initialized.

2.3.3.3 The MMSR system requires no operator intervention once initialized.

2.3.3.4 Test Operations on AMSWR are defined under Chapter 2.1 where personnel will support the range from either RTDC #3 or LSC as a back-up operations site. A single operation will vary in total RTH due to the uniqueness of testing within shallow water. In general, each AMSWR operational period will require 16 labor hours for LSC pre-test calibration/check-out and 8 labor hours pre-test calibration/check-out when operated from Site 1.

2.3.3.5 Technical support for AMSWR will be required to repair equipment, such as repairs to cables and connectors. This support is estimated at 160 labor hours per year. PTS and AMSWR will not be operated concurrently.

2.3.3.6 Typically, each BARTS operational period will require 60 labor hours for the mobilization/demobilization phases, which includes support from marine, heavy lift, test planning and technical personnel.

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2.3.3.7 Typically, PTS operation will occur once every two years and the maintenance and general support of PTS will require 200 hours per year.

2.3.3.8 ESM, MLST3, and AS3 will be operated simultaneously.

2.3.3.9 ESM typically provides customer test support for 10 test periods per month with a peak period of 30 test periods, each typically 1-2 hours. ESM peak periods are defined to exist for a three week period occurring two times a year.

2.3.3.10 Perform six month full calibrations on the ESM system

2.3.3.11 Routine ESM, MLST3, and AS3 maintenance is estimated at 200 labor hours each per year.

2.3.3.12 AS3 is expected to provide customer test support for 6 test periods per month with a peak period of 12. Each test period is estimated at 4 hours of attended support, plus one hour of M&O for pre/post- system checks. AS3 peak periods are defined to exist for a three week period occurring four times a year.

2.3.3.13 It is estimated that MLST3 will be operated 24-36 hours per Group Sails, PCOs, and CSSQTs events.

2.3.3.14 For PMS/PSMS, test support typically requires the operator(s) to be at sea for approximately 12 to 16 hours each day and requires at least one system operator. The exact number of operators required is dependent upon the specific test requirements. Each test consists of 2 days of pretest preparations, 1 day of load-out/dockside preparations, ½ day of at-sea systems checks, approximately 1 to 10 days of at-sea testing, ½ day of dockside/off-load and 2 system post-test hours required for each data acquisition hour. These systems may be required to operate simultaneously.

2.3.3.15 Surface vessels typically require a 12-hour SSRNM Trial using either the portable system or the fixed-array. Trials may be conducted back-to-back. Group Sail tests require 3 days of pretest preparations and each ship within the Group Sail require 12 hours of data acquisition. The portable system support requires 1 ½ days of load-out/dockside preparations, ½ day of at-sea systems checks, and 1 day of dockside/off-load. Real-time SSRNM operations require two system operators and minimal posttest support.

2.3.3.16 It is estimated that at total of 20 to 25 days of environmental measurements are required using the portable MK12 XBT System, the OS 2000 CTD System, and/or the Sea-Bird 25 CTD System. Although only a few hours of actual data may be collected each day, test support typically requires the operator to be at sea for approximately 12 to 16 hours each day and requires one system operator. Each test consists of 1 to 2 days of pretest preparations, ½ to 1 day of load-out/dockside preparations, ½ day of at-sea systems checks, approximately 1 to 10 days of at-sea testing, ½ day of dockside/off-load load and 2 system post-test hours required for each data acquisition hour. These systems may occasionally be required to operate simultaneously,

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and any one of these systems may be required to operate simultaneously with the acoustic measurement systems.

2.3.3.17 FORACS dockside, on-range, or open ocean tests may be scheduled concurrently. However, FORACS /Sensor Accuracy Tests on the Weapons and FORACS Ranges are not scheduled concurrently.

2.3.3.18 Acoustic test support requirements are typically four tests per year using the DNM system. Each trial consists of one week of pretest preparations, 1 ½ days of load-out/dockside preparations, ½ day of at-sea systems checks, approximately 3 days of at-sea testing requiring 12 hours of data acquisition each day, 1 day of dockside/off-load and 6 system post-test hours required for each data acquisition hour.

2.3.3.19 Surface Ship Sensor Accuracy Tests require two 8 hour days of dockside tests; one 12 to 16 hour day of on-range tests; data reduction/analysis; a quick look report; and a final report.

2.3.3.20 Submarine SATs require one to three 8 hour days of dockside tests; one 12 to 16 hour day of on-range tests; data reduction/analysis; a quick look report; and a final report.

2.3.3.21 Submarine RDF/ESM tests require one 12 to 16 hour day of on-range tests; data reduction/analysis; a quick look-report (with bearing plots); and a final report (also with plots).

2.3.3.22 Open ocean RDF/ESM tests normally encompass 3 to 5 days at sea. Open ocean tests require: dockside equipment checkout; data reduction/analysis; a quick-look report; and a final report.

2.3.3.23 Foreign surface ship SATs require: two 8 hour days of dockside tests; two 12 hour days of on-range tests; data reduction/analysis; a quick look report; and final report.

2.3.3.24 Foreign submarine SATs require: one to three 8 hour days of dockside tests; two to five 12 hour days of on-range tests; data reduction/analysis; a quick look report; and a final report.

2.3.3.25 Normally, 1 to 2 helicopters shall be tested sequentially during one 12 hour day on-range. Foreign helicopter SATs require: on-range tests; data reduction/analysis; a quick look report; and a final report.

2.3.3.26 The FORACS DGPS tracking system shall be used to provide in-air track an average of eight 12 hour days on-range each year for non-ASW sensor-related testing. The FORACS ESM system shall be used an average of sixteen 8 hour days on-range per year.

2.3.3.27 Approximately 1,100 pounds of shipboard FORACS equipment, including cabling, DGPS, IDATS, an engineering theodolite, and communications equipment is transported to and from the test vessel.

2.3.3.28 Level of effort estimates vs. test phases are as follows:

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Platform Type	Stationary Testing Pers/Days	Shipboard Underway Pers/Days	Underway Testing - Console /Target Pers
SURF FORACSRRange)	6/2	6/1-2	2 (console)
SUB (WeaponsRange)	6/1-3	3**/1-5	2* (target vsl)
SUB (Open Ocean)	None	3**/3-5	2 (target vsl)
HELO	None	None	1-3 (console)
* Does not include personnel needed for tracking system operation.			
** Two (2) for RDF/ESM (only) tests.			

2.3.3.30 Quick look reports for all standalone Sensor Accuracy Tests (less RDF/ESM only tests) shall be message-type reports generated within 24 hours of completion of on-range testing. A quick look message report, for Sensor Accuracy Tests performed as part of another test, shall be issued within 96 hours of test completion and shall contain final test data analysis results.

2.3.3.31 Final reports for all non-RDF/ESM type tests shall be completed and distributed within fifteen working days of completion of on-range testing.

2.3.3.32 Quick look reports for RDF/ESM (only) type tests shall also be message-type reports but shall also include initial bearing plot data. Initial bearing plots may be required to be forwarded upon Range User request. Reports shall be generated for each trial within 24 hours of completion of on-range testing.

2.3.3.33 For RDF/ESM-only tests, the Contractor shall provide a final report (including plots) within five working days of completion of testing.

2.3.3.34 Travel

2.3.3.34.1 FORACS team travel for test support to Port Everglades, Cape Canaveral, FL; Norfolk, VA; or Mayport, FL may be estimated from Para **2.1.3.6.4** and Para **2.3.3.28**.

2.3.3.34.2 An estimated 5 trips to Europe per year, two people per trip.

2.3.3.34.3 Additionally, it is estimated that Mobile FORACS testing, requiring all NFA Team members, shall be conducted at remote locations, typically at one of the NATO FORACS member nations, approximately 5 times per year.

2.3.3.35 AUTECH's West Palm Beach Headquarters and Andros Island telephone systems are operational 24 hours per day, 365 days per year:

2.3.3.35.1 The WPB AT&T System-75 utilizes 81 of an available 136 trunks, and 175 of an available 350 phone extensions.

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2.3.3.35.2 The ASD Definity G3I system utilizes 40 of an available 400 trunks, and 1600 extensions. Typically, twelve telephone Personal Identification Number (PIN) changes are made per week.

2.3.3.36 The following communication capabilities are required 24 hours per day, 365 days per year: a 12-port Octel and a 6-port AUDIX telephone answering capability; the AUTECH's Andros Island Message Center; the AUTECH microwave, SATCOM, PA, encryption, and radio paging systems; TACAN and NDB; and the Satellite Communications System and the Harbor Common Circuits.

2.3.3.37 The OCC radio RF circuits are monitored and operated during normal work hours and to support the range schedule of operations.

2.3.3.38 Non-mission essential communications systems such as the VTC, cable TV, and Continuing Education Satellite System are supported during normal work hours. VTC operations are typically required 16 times per month.

2.3.3.39 The Andros/Key West STU III BATELCO circuit and the emergency voice HF voice circuit are manned 24 hours per day, during Satellite Communications System outages/hurricane drills/alerts, respectively.

2.3.3.40 The AUTECH LAN wiring maintenance workload may be derived from the following table:

		Ports Available	Ports In Use
West Palm Beach	Classified	72	11
	Unclassified	508	339
Andros	Classified	258	127
	Unclassified	1218	375

2.3.3.41 Typical shipboard installations require 1.0 Events/Mo., 5.0 Avg. Hrs/Event for PARGOS; and 4.0 Events/Mo., 8.0 Avg. Hrs/Event for radio equipment.

2.3.4 PERSONNEL

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

2.3.5. GOVERNMENT FURNISHED PROPERTY

See Appendix 2.3

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2.3.6 PERFORMANCE REQUIREMENTS SUMMARY

Performance Objective	PWS Paragraph	Performance Expectation	Method of Assessment
Reliable performance of test systems.	2.3.2	Range test systems meet 100% of customer's test requirements.	Government evaluation of contractor data plus customer feedback.

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2.3A (OPTION) AUTECH Legacy Range Test Systems

Chapter 2.3 defines requirements for nearly all AUTECH test systems. This chapter specifies the scope and requirements for the remaining AUTECH legacy test systems. For the purpose of this SOW, “legacy test systems” refers to a small number of air target tracking systems that, for all practical purposes, are unique in design and construction to AUTECH. Insofar as newer, commercial standard, systems are displacing the function of these legacy systems, the period of time necessary for their continued operation is uncertain.

These systems are identified as follows:

- Hyperbolic In-air Tracking System (HITS)
- AUTECH Instrumentation Radar System (AIRS)
- Rooftop radar (RTR)

The HITS is an RF-based multilateration system of 4 receiver sites which operates in the X-band. It uses beacon hardware to track instrumented airborne and surface objects. This system provides precise two dimension (X,Y) track of up to 10 surface or airborne objects simultaneously. Receiver processors, located on the microwave towers at Sites 1, 2, 3, and 4, send processed information to the Hyperbolic Processor at Site-1. The Site-1 Hyperbolic Processor passes the time tagged 2 dimensional position data to the ARGOS Host Computer(s) for merging, archiving, and display with other tracked objects. Additionally, there is a Reference Beacon Transmitter at Site-1.

The AIRS track Radars operate in either beacon or skin (augmented or un-augmented, ie. coded or uncoded) track mode. In beacon mode, AIRS Radars provide precision three dimensional track (X,Y,Z) of single objects at rates up to 1,000 times each second. The coded beacons are standard AN/DPN-78 coded X-band transponders. The time tagged azimuth and elevation data collected from these systems are transmitted to Site-1 over the microwave communications system. Skin track of non-instrumented objects may also be accomplished, but with less accuracy. Two other Radar systems, one tower-mounted surveillance radar (RTR), and one modified AIRS radar, are used for special range user experimental tests, and are restored to operational status only on demand, with a 30-day advance notice.

2.3A.1 APPLICABLE DOCUMENTS:

- OMI 81-2, AUTECH Instrumentation Radar System (AIRS)
- OMI 93-1, RTR-II Radar
- OMI 96-1, AUTECH Instrumentation Radar System (AIRS) Solid State Track Radar (SSTR) Check and Adjustment Manual for SSTR #2
- HITS DOCUMENT; Hyperbolic In-Air Tracking System (HITS) Technical and Operations Manual
- HITS DOCUMENT; HSS 2000 Documentation Package
- HITS DOCUMENT; Beacon PPC Assembly and Altitude Encoder Assembly, Installation Instructions
- HITS DOCUMENT; HSS-2000 HITS Slave Station Technical Manual

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- OPNAVINST 2400.7 (Series), Frequency Usage Report
- OPNAVINST 2400.20 (Series), Navy Management of the Radio Frequency Spectrum
- OPNAVINST C 5510.93 (Series), Navy Implementation of National Policy on Control of Compromising Emanations (U)

2.3A.2 REQUIREMENTS:

2.3A.2.1 The contractor shall maintain and operate the hardware systems necessary to provide In-air tracking services.

2.3A.2.2 The Contractor shall insure that the In-air tracking systems meets scheduled test requirements, and shall:

- ◆ Take quantitative measurements on the In-air tracking systems to be cataloged and compared to historical data to insure that the system is operating within specification.
- ◆ Provide operational support during challenging or unique test periods.
- ◆ Perform periodic preventative and corrective maintenance on the In-air systems.
- ◆ Understand all In-air tracking hardware and how it interrelates with other AUTEK systems.

2.3A.2.3 The Contractor shall conduct the tracking and/or surveillance of surface and airborne objects on the AUTEK Ranges using AIRS, RTR, and/or the HITS according to the AUTEK Schedule of Range Operations.

2.3A.3 WORKLOAD FACTORS

2.3A.3.1 Operation of HITS will average 200 data acquisition hours per month, primarily to support scheduled ASW exercises and/or exercises that require the track of multiple airborne platforms.

2.3A.3.2 Peak workload months for HITS usage will be approximately 400 hours/mo. No operators are required except for initialization of system operation from a single controller station at Site-1. During routine maintenance cycles all diagnostics are performed from the same Site-1 controller position.

2.3A.3.3 Typically, the AIRS radars will be operated 100 hours per month. Occasionally, special test circumstances may dictate the Radars be operated and manned simultaneously. Specific requirements will be stated in the applicable test Operations Directive.

2.3A.3.4 Peak workload months for AIRS usage of approximately 200 hours. The operation of Radar 2F will be tasked by NUWC with a separate Work Order or Letter of Direction. Sufficient notice will be given to allow the Contractor to restore the system to operational status prior to the scheduled requirement. The Operations Directive (OD) will state the exact operational requirement for Radar 2F.

2.3A.3.5 During periods where the operation of Radar 2F is required that requirement will replace the operational requirement of one of the other two track Radars, 2A or 2B, but not both.

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2.3A.4 PERSONNEL

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel

2.3A.5 GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 2.2

2.3A.6 PERFORMANCE REQUIREMENTS SUMMARY

Performance Objective	PWS Paragraph	Performance Expectation	Method of Assessment
Reliable performance of test systems	2.3A.2	100% of customer's test requirements are met by range test systems	Government evaluation of contractor data plus customer feedback.

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2.4. UNDERWATER TARGETS

AUTEC primarily utilizes two underwater targets to support range testing, the MK 30 Mod 1 Target and the Expendable Mobile Acoustic Training Target (EMATT). Throughout this section, the MK 30 Mod 1 Target will also be referred to as, “MK 30”, “MK 30 Target” or “target”, while the EMATT will be referred to as “EMATT”.

The MK 30 Mod 1 Target is a 21 inch diameter, approximately 20 foot long, pre-programmed, self-propelled, torpedo-like device. By simulating a submarine, the MK 30 Target can simultaneously stimulate most Anti-Submarine Warfare (ASW) sensors and torpedo sonar systems.

The typical target cycle begins with receipt of a target request message containing the number of targets requested, their geometry and acoustic configurations. This is followed by target preparation in the Range Support Shop (RSS), launch, in-water run, recovery, and post-run procedures. Target preparation includes: functional systems tests, consumables replacement, geometry and acoustics programming for run profile, battery charging, pressurizing internal nitrogen gas systems, dynamic tank test, final target assembly, leak testing, weigh-out, and certification for run.

The MK 30 Target is launched from a surface vessel or helicopter and follows a pre-programmed run-profile. An Acoustic Command Link (ACL) Controller located in the Command Control Building may be used to generate remote acoustic commands which are transmitted through the in-water system's UQC or bi-directional hydrophones to modify the target's course, speed and/or running depth, or to terminate the run. In addition, an emergency shutdown system can be used to generate and transmit shutdown command signals from surface craft or helicopters in the event of range safety violations or failure of the ACL.

Following shut-down, the target is recovered by a torpedo retriever range craft or helicopter, and returned to the RSS for post-run procedures. Post-run procedures include: examination for physical damage, wash-down, sectional disassembly, retrieval of internal digital data recorded during the run, troubleshooting and repair/replacement of problem components, and refurbishment of appropriate assemblies.

The EMATT is a small (3 feet long, 5 inches in diameter), negatively buoyant, expendable, self-propelled underwater vehicle that can be launched in flight from fixed-wing and rotary-winged aircraft or from surface ships with a launch platform of less than 20 feet. The EMATT's acoustic system provides narrow band tonals and an echo repeater in the sonar and torpedo frequency bands. A typical EMATT cycle consists of removal of the unit from its overpack, programming of the geometry and acoustics, launch and run. Since the EMATT sinks following the run, there are no recovery or post run efforts required. AUTEC's use of EMATTs is generally restricted to instances when a MK 30 Mod 1 target is unavailable due to heavy demand, inability to launch and/or recover, etc. or specific user request.

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MK 30 target and EMATT operations are governed by NAVSEA Applicable Documents and target specific OCDs.

The MK30 OS is located in the RSS facility. The internal layout of the facility provides four MK 30 Target preparation/post-run lines and one preventative maintenance line. The Mobile Target Facility also includes a logistic storage area, a Battery Shop, data reduction and analysis facilities, engineering and management offices and space for other related functions.

EMATTs are stored in a secured area of the RSS. Programming and other EMATT operations are easily accomplished at a standard-sized work bench.

2.4.1 APPLICABLE DOCUMENTS:

SW581-BA-LSS-XXX/MK30, Operational Logistic Support Summary
SW581-C1-MMI-XXX/MK30 series, Technical Manual for Target Torpedo MK30,
Mod 1
SW581-C0-MMI-XXX/MK30 series, Technical Manual for Special Support Equipment,
Description, Operation and Maintenance
NAVSEA OD 46291, Mobile ASW Targets Technical Data System, TMIS Reporting Handbook
Mobile ASW Target MK 30 Mod 1 Target Certification Examining Board (TARCEB)
Procedure
NAVSEA TO 300-AM-ORD-010, Quality System Requirements and Methods for Navy
Weapons and Combat Systems
ASW Mobile Target MK 30 Mod 1 Operational Guidance
MK 39 EMATT Field Programmability System User's Manual
SW581-D0-PRO-010/EMATT, Technical Manual Expendable Mobile ASW Training Target
(EMATT), Description, Operation, Launch and Handling

2.4.2 REQUIREMENTS:

2.4.2.1 The Contractor shall prepare, and have available for launch, MK 30 Targets in configurations as are required by the AUTEK Schedule of Operations. The targets shall run full term, executing the expected run geometry, and emitting the proper acoustic signature.

2.4.2.2 The Contractor shall maintain and operate the battery shop in the RSS. Assemble, activate, charge, scrap and maintain records for MK 30 Target batteries.

2.4.2.3 The Contractor shall collect data, maintain records, and prepare/submit/review technical and administrative reports/documentation including Weekly status report, Target Data System (A00_) and Monthly Battery report (A00_).

2.4.2.4 The Contractor shall analyze, troubleshoot, correct, and subsequently verify proper correction of defective target and SSE components and assemblies. The Contractor shall perform limited on-site repairs and authorized modifications to MK 30 Target Functional Item Replacement (FIR) components as contained in Field Change Instructions and Field

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Change Bulletins. Items requiring in-depth repair and/or major overhaul maintenance are returned to the MK 30 Depot.

2.4.2.5 The Contractor shall: maintain an on-site inventory, and provide inventory control of MK-30 consumables, expendables, spare/repair parts, tools, etc., ensure that timely inputs/updates of on-hand assets are made to the target's Logistics Information System (LIS); perform receipt inspection in accordance with subsystem test procedures where applicable; and ship defective MK 30 Target components and other related items as required.

2.4.2.6 The Contractor shall create/verify pre-programmed run geometries and other acoustic/dynamic target presets.

2.4.2.7 The Contractor shall install and evaluate MK 30 Target and EMATT modifications and improvements.

2.4.2.8 The Contractor shall provide configuration control of all MK 30 Target Program drawings, documentation, related publications, and correspondence.

2.4.2.9 The Contractor shall control target systems during all MK 30 Target in-water runs to ensure that the target is operating in a safe and proper manner.

2.4.2.10 The Contractor shall maintain and operate in accordance with the AUTEK MK 30 Target Quality Control/Quality Assurance Program.

2.4.2.11 The Contractor shall attend meetings and conferences related to Target Program matters. The Contractor shall make technical and programmatic presentations to senior Government or other contractor representatives as requested by the Government.

2.4.2.12 The Contractor shall receive, store, inventory, program and issue EMATTs to support range testing.

2.4.3 WORKLOAD FACTORS

2.4.3.1 Approximately 20 in-water runs per month are conducted with MK 30 targets while 3 in-water runs per month are typically conducted with EMATTs.

2.4.3.2 An average monthly workload of 23 target preparations is estimated for MK 30 Targets. The difference between target preparations and actual in-water runs results from Range User test cancellations, weather interruptions, pre-launch failures, etc.

2.4.3.3 The peak workload requirement for MK 30 Targets is estimated to be 15 target preparations per week for two consecutive weeks. A maximum of 3 peaks are expected per year.

2.4.3.4 The MK 30 Target failure rate averages 10% of total in-water runs. Estimated average time to repair is eight hours per failure.

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2.4.3.5 Travel: It is estimated that 2 trips of five days each will be required yearly for 3 people for purposes of attending/participating in MK 30 Target Program meetings and conferences.

2.4.3.6 Approximately 5 times per year it is necessary to install and evaluate modifications and improvements made to MK 30 Target Program equipment. Most efforts typically require 10 labor hours each.

2.4.4 PERSONNEL:

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

2.4.5 GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 2.4

2.4.6 PERFORMANCE REQUIRMENTS SUMMARY TABLE:

PERFORMANCE OBJECTIVE	PWS PARAGRAPH	PERFORMANCE EXPECTATION	METHOD OF ASSESMENT
Target Mission Success Score (TMSS)	2.4.2	\geq 95% of successful runs compared to total runs	Review of Weekly MK 30 Status Report
Prep to Launch Ratio	2.4.2	\leq 1.1 target preps per target launches	Review of Weekly MK 30 Status Report
Customer Satisfaction Score (CSS)	2.4.2	\geq 99% target tests supported per total target tests	Review of Post Test Summary Report

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2.5 EXERCISE WEAPONS AND ORDNANCE

AUTEC's exercise weapon/ordnance support requirements encompass a broad spectrum of U.S. and foreign Navy exercise and dummy undersea warfare and surface warfare weapons, RDT&E/FOT&E undersea vehicles, and other items such as small arms ammunition, sonobuoys, pyrotechnics, mobile targets, and cartridge activated devices. The key products and services of this chapter are the handling, transportation, preparation, post-run, containerization, storage and issue of various US and UK arms ammunition & explosives (AA&E). The Weapon / Ordnance Handling Process Diagram can be found in Appendix 2.5. Preparation and post-run requirements for Mobile Targets MK-30 are addressed separately in Chapter 2.4 of this Specification.

Tests and exercises conducted on the AUTEC Ranges predominately involve the use of undersea vehicles. Some tests include the use of actual exercise weapons (MK-48 Mods 4, 5, and 6, MK-46 Mods 4 and 5, MK-50, MK-54, AGM-114 (Hellfire), etc.) while others employ dummy weapon shapes (TOTEM, EHCTV, RECAP, REXTORP, DLV, PLV, CATM, or RDT&E/FOT&E test vehicles).

Exercise weapon and target vehicles (both U.S. and foreign) arrive and depart from Site 1 on Andros Island in a variety of ways. They may be transported from CONUS by the MSC barge from Port Canaveral, FL, or C-130 aircraft, but predominantly, they arrive by Range User vessels, helicopters, or aircraft, and are launched by the Range User platform. Range User guns such as GAU -16 and other small arms are typically transported by the Range User and are stored in the appropriate facility e.g. Navy weapons armory or similar facility. Small arms ammunition, sonobuoys, smokes, and other pyrotechnic devices used to support various tests and operations are stored in Ready Service Lockers (RSL) and magazines located at Site 1.

Most of the vehicles launched at AUTEC are positively buoyant and float to the surface after an in-water run. At the end-of-run, these vehicles are recovered by either AUTEC surface vessel or helicopter. Vehicles are then transported to Site 1 where they are loaded onto flat-bed trailers and taken to AUTEC's Torpedo Facility (Bldg. 1684) for post-run treatment/turn-around, and shipment as required by the Range User, typically a heavyweight or lightweight torpedo IMA or RDT&E facility. Vehicles are normally returned to CONUS aboard the MSC barge and occasionally C-130 Aircraft.

AUTEC operates a NAVSEA certified Intermediate ("I") Level Maintenance Activity (IMA) facility for REXTORP vehicles. These MK-46 and MK-50 REXTORPs are issued to AUTEC's Range User's for on-range tests, or transported to other activities/vessels. One REXTORP can make many runs at AUTEC in the course of its life.

Post-run procedures are defined in the applicable OCD/SOP, technical manuals or NAVSEA OD for each vehicle type. In addition, exercise torpedo OTTO Fuel waste is managed by the post-run facility under the direction of the In-Service Engineering Agent (ISEA), NUWC Division, Keyport, WA. A representative list of exercise weapon preparation/post-run equipment is provided in Appendix 2.5. Actual inventory is as provided by the Government. All exercise and dummy

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weapons, RDT&E test vehicles, targets, pyrotechnics/explosive devices and other ordnance items must be handled in accordance with Government approved procedures.

The AUTECH Torpedo Facility (Bldg. 1684) is fully ventilated to meet NAVOSH standards. The facility is equipped with two flushing stands, two ullage exhaust removal lines, two transducer/washdown lines, and two instrumentation and/or exercise recording medium removal lines to facilitate post-run of exercise torpedoes MK-48 Mods 4,5, and 6. Additionally, to support the post-run of exercise torpedoes MK-54, MK-46 (all Mods), there are two ventilated lines for use with Portable Flushing Systems. These Portable Flushing Systems are typically used at the Site-1 facility, but are occasionally used aboard AUTECH vessels.

The UK maintains and operates a weapon staging and turnaround facilities for various UK weapons including, Tigerfish, Spearfish, and Stingray torpedoes and MK-40 target vehicles at Site 1. Explosive material handling services, transportation and safety coordination for the movement of UK weapons are provided by AUTECH.

2.5.1 APPLICABLE DOCUMENTS:

OPNAVINST 8023.2 (Series);	U.S. Navy Explosives Safety Policies, Requirements, and Procedures (DoN Explosives Safety Policy Manual)
SPCCINST 8020.12 (Series);	Supply Management of Ammunition: Policy, Procedures, and Responsibilities.
NAVFAC P-307;	Management of Weight Handling Equipment
NAVSEA 6340-AA-MMA-010;	Technical Manual for OTTO Fuel II Safety, Storage, and Handling Instructions
NAVSEA SW 850-EA-MM-050;	Employment Procedures: TOMAHAWK Test Vehicles
NAVSEA SW 512-AD-ASY-010/MK-46 FLT ACCESS;	Assembly Instructions for MK-46 Torpedo/MK-46 REXTORP Flight Accessories
NAVSEA SW 515-AG-MM1-010/MK-46 REXTORP;	Maintenance Manual Intermediate Level for MK46 Recoverable Exercise Torpedo (REXTORP)
NAVSEA SW 516-AA-MMM-040/U MK-50;	Technical Manual for Torpedo MK-50 Mod 0 Quality Assurance/Shop Traveller for Storage and Issue of Organizational Maintenance
NAVSEA SW 516-AB-MMO-010/MK-50 REXTORP;	Technical Manual for REXTORP MK-50 Organizational Maintenance
NAVSEA SW 516-AC-MMI-010/MK-50 REXTORP;	Technical Manual for Recoverable Exercise Torpedo (REXTORP) MK-50
NAVSEA SW 513-AE-PRO-010/MK48 MODs;	Torpedo MK-48 All Mods Portable Preservative Flushing System Description and Procedures
NAVSEA SW 023-AH-WHM-010;	Handling Ammunition and Explosives With Industrial Materials Handling Equipment (WHE)
NAVSEA SW 020-AF-ABK-010;	Motor Vehicle Driver and Shipping Inspections Manual For Ammunition, Explosives and Related Hazardous Materials
NAVSEA OP-5;	Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation, and Shipping
NAVSEA OP 2173, Vols. 1 and 2;	Approved Handling Equipment for Weapons and Explosives

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NAVSEA OP 4024, Vol. 3, Part 2G w/Local Change No. 001-93; Heavyweight Torpedo
Submarine Tenders (AS) and Shore Facilities Ready for Issue
Activities
NAVSUP P724 Conventional Ordnance Stockpile Management

2.5.2 REQUIREMENTS:

2.5.2.1 The Contractor shall perform local transportation, handling, post-run treatment, preservation, containerization, reporting, and shipping of the all ordnance and vehicles listed in Appendix 2.5.

2.5.2.2 The Contractor shall be responsible for coordinating and expediting the trans-shipment of ordnance to/from Andros Island and CONUS.

2.5.2.3 The Contractor shall conduct post-run operations for Range User vehicles defined above.

2.5.2.4 The Contractor shall extract MK 458 (all mods) exercise weapon internal run data for analysis and return to the appropriate IMA or Range User. The Contractor shall extract MK-46 and MK-50 EXTORP internal run data and return to the appropriate IMA or Range User.

2.5.2.5 The Contractor shall operate the AUTECH REXTORP IMA.

2.5.2.6 The Contractor shall assure that AUTECH's Ordnance Handling Equipment (OHE), as well as any other WHE/MHE equipment including slings, pendants, etc. used to handle/transport exercise and dummy weapons, targets, other ordnance items, etc. is periodically inspected and tested, and that the load carrying capacity is certified.

2.5.2.7 The Contractor shall operate in accordance with all Navy Explosive Safety procedures. See Appendix 2.5 for a representative list of facilities with associated Net Explosive Weight Class/Division and associated Explosive Safety Quantity Distance (ESQD) site approvals.

2.5.2.8 The Contractor shall provide an Explosive Safety Officer.

2.5.2.9 The Contractor shall control and maintain all of AUTECH's magazines, storage lockers, and ready service lockers. Smokes and other pyrotechnic devices used to support various tests and operations shall be stored in Ready Service Lockers (RSL) and magazines located at Site 1. The Contractor shall assure that only compatible ordnance items are stored in magazines, storage lockers, and ready service lockers.

2.5.2.10 The Contractor shall manage the Sonobuoy Locker, AUTECH Facility 1032, including responsibility for Sonobuoy receipt, transport, storage, inventory, reporting, and transport/disposal of sonobuoy shipping containers.

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2.5.2.11 The Contractor shall generate Retail Ordnance Logistics Management System (ROLMS) Ammunition Transaction Reports and enter them into the Conventional Ammunition Integrated Management System (CAIMS).

2.5.3 WORKLOAD FACTORS

2.5.3.1 Typical ordnance operations may occur simultaneously in any two of the below evolutions:

Helicopter load-out of MK-30 Mobile Targets or helicopter offload of recovered targets or exercise vehicles;

Exercise weapon/mobile target load-out/offload of AUTECH vessels;

MK-48/MK-46 EXTORP post-run; MK-46/50 REXTORP prep/post-run

MSC barge load/offload;

2.5.3.2 Average estimated prep/post-run workload:

ACTION REQUIRED	AVERAGE VEHICLES/MONTH			
	REXTORPS MK 46/MK 50	MK 46/MK 50/MK 54 EX TORPS	MK 48/All Mods EX TORPS	OTHER
Prep for Run	21	-	-	-
Post Run *	25	6	22	4
20th Run "I" Level Maintenance	2	-	-	-

NOTE: * PCO tests not included. See Chapter 2.1 for weapon quantities during PCO tests.

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2.5.3.3 Peak estimated prep/post-run workload: Peak periods are defined in both weekly and monthly terms for different vehicle types. Typically, monthly peak periods for specific vehicle types shall be limited to once per quarter. A peak during any particular week may not necessarily result in a peak workload for the month. The Contractor is expected to support peak workloads as described below.

ACTION REQUIRED	PEAK VEHICLES PER: WEEK/MONTH			
	REXTORPS MK 46/MK 50	MK 46/MK 50 EX TORPS	MK 48/ADCAP EX TORPS	OTHER
Prep for Run	18/32	-	-	-
Post Run*	17/44	14/20	20/30	4/16

NOTE: * PCO tests not included. See Chapter 2.2 for weapon quantities during PCO tests.

2.5.3.4 For Data extraction of MK-48 Mods 5 and 6 Exercise Torpedoes, removal of recording media requires approximately 30 minutes. For the MK 48 Mod 4, the time required is approximately 90 minutes.

2.5.3.5 MK-30/other mobile target handling requirements may be estimated using information presented in Chapter 2.4 of this Specification.

2.5.3.6 Typical workload factors for vessel load/offload of exercise weapons/mobile targets are below:

ACTION REQUIRED	EXPECTED PERIODICITY OF EVENTS			
	WEE KLY	MONTHLY	YEAR LY	ORDNANCE HANDLING CERTIFIED PERS TYPICALLY REQUIRED
MSC Barge	1	3	33	10 – 12
AUTEC Vessel Load	5	12	150	8-11*
AUTEC Vessel Offload	6	15	150	8-11*
Note: *Vessel Dependent				

2.5.3.7 It is estimated that 250 individual vehicles are recovered by helicopter each year. Typically, 6 Ordnance Handling Certified personnel are required to move such vehicles between the Site 1 heliport and AUTEC's Torpedo Facility.

2.5.3.8 Other events, such as movement of exercise weapons/ordnance/etc., to/from the Andros Town Airport, or to/from or between the Site 1 magazine storage or work areas, typically require 7 Ordnance Handling Certified personnel.

2.5.3.9 Typically, 425 Sonobuoys are used per month.

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2.5.4 PERSONNEL :

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

2.5.5 GOVERNMENT FURNISHED PROPERTY:

See Appendix 2.5

2.5.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE:

Performance Objective	PWS Paragraph	Performance Expectation	Method of Assessment
Timely and complete preparation and coordination of exercise weapons and ordnance	2.5.2	Scheduled Weapons and Ordnance events are rarely missed due to Contractor error	Government reviews of contractor data and customer feedback

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2.6. LAUNCH AND RECOVERY SERVICES

A significant portion of AUTECH's workload involves the conduct of tests designed to assess the performance of developmental or in-service torpedoes, other undersea vehicles, combat systems, and the proficiency of Fleet personnel in employing these systems. Such tests typically involve the use of mobile targets, and the launching of exercise or dummy weapons. To support such tests, AUTECH has the capability to launch and recover mobile targets and exercise weapons/test vehicles using either the Contractor's helicopters or selected AUTECH range vessels. Most exercise weapons recovered at AUTECH are launched from Fleet platforms operating on the Weapons Range. Occasional recovery services are required to support special tests conducted in the open ocean or at remote test sites.

The Contractor's helicopters can be equipped with an AUTECH Helicopter Launcher to allow air launching (at low altitude) of MK-30 Targets. The RANGEMASTER (TWR-501) and the RANGE ROVER are both equipped with a Telescopic Target Launcher System (TTLS) for launching either MK-30 or MK-40 (UK) Targets. These launchers are attached to arms, similar to articulated hydraulic cranes, and are suspended over the stern of the launching vessel. EMATT vehicles, often used at AUTECH, are hand launched from both the AUTECH helicopter and AUTECH Range Vessels.

The RANGER is equipped with a modified MK-59 Submarine Torpedo Tube and an air-over-water impulse ejection system, as well as with a MK-32 Mod 17 Above Water Torpedo Tube (AWTT). The MK-59 Torpedo Tube is installed below the ship's waterline and emulates an actual submarine launch system. The RANGER also has internal (below deck) storage for eight test vehicles, and an internal weapon handling system and torpedo tube re-load capability.

Pre-launch target/weapon warm-up power, synchronous and non-synchronous run inputs, status monitoring, launch commands, and post-launch wire-guide control (as applicable) are effected using portable Launch Control Boxes (for MK-30 Targets) or Fire Control Systems (for torpedoes) which interface to the weapons/targets and launcher systems through umbilical (e.g. A and B) cables and guidance wires. Launch Control Boxes are part of the MK30 Target Program Special Support Equipment (SSE) listed in Appendix 2.6 of this Specification. Portable Fire Control Systems, for the pre-setting/control of exercise torpedoes and test vehicles, are provided by the Range User.

Actual fire control, weapon and launcher signal timing, and dynamic launch operation and response functions for the MK-59 Torpedo Tube can be monitored using a portable Torpedo Tube Instrumentation (TTI) system. A TTI system consists of strip chart recorder, various transducers and electrical pick-ups, a velocity measuring device and equipment to interface with the launch system. TTI systems measure and record all electrical voltages and signals required to warm-up/launch a vehicle, the impulse pressure at launch, vehicle velocity and acceleration, and post-launch signals transmitted/received on the vehicle's guidance wire (if applicable). Analysis of recorded data can define launch system performance.

Typically, vehicles launched at AUTECH are positively buoyant and float to the surface at end-of-run, and are recovered, either by helicopter or range vessel for subsequent return to Site 1. Vehicles typically recovered at AUTECH include those listed in Section 3 Requirements in the Ordnance Support chapter 2.5. In addition recovery and transportation services are provided for UK's

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Spearfish, Stingray, and Tigerfish exercise weapons and Mk-40 targets. The Contractor's helicopters can be equipped with various recovery cages for the end-of-run retrieval of both mobile targets and exercise weapons. The RANGEMASTER is AUTECH's primary recovery vessel, however, both the RANGER and the RANGE ROVER can be equipped with a Ramp Recovery System for retrieval operations. The Ramp Recovery System, combined with the large size of these two vessels, allows recovery operations to be conducted in heavy weather conditions, with winds up to 30 knots.

2.6.1 APPLICABLE DOCUMENTS

OPNAVINST 8023.2 (series);	U.S. Navy Explosives Safety Policies, Requirements, and Procedures (DON Explosives Safety Manual)
NAVSEA SW 395-AL-MMO-010/MK 429 Mod 1;	Technical Manual, Description, Installation, Operation, Maintenance and Illustrated Parts Breakdown-Air Charging Panel and Cabinet Assembly MK-429 Mod 1
NAVSEA SW 395-AM-MMO-MK-32 010/MK32 Mods 17/18;	Technical Manual Surface Vessel Torpedo Tube Mods 17/18 Description, Operation, Maintenance, and Illustrated Parts Breakdown.
NAVSEA SG 420-CG-MMO-010/MK 9 Mods 0-3;	Description, Installation, and Operational Use Torpedo Loading Tray MK-9 Mods 0, 2, and 3
NAVSEA SW 515-AO-PRO-020/MK 46;	Technical Manual for Firing Craft Procedures for Torpedo MK-46 Mod 1, Mod 2, and Mod 5 (Surface Vessel Torpedo Tubes)
NAVSEA SW 591-CO-MMO-010/LCHSYS MK 30 TGT;	Technical Manual, Operation and Maintenance Helicopter Launch System MK-146 Mod 0 (used with Mobile Target MK-30)
NAVSEA SW 581-C1-MMI-040/MK 30;	Technical Manual for Firing Craft Procedures Target Torpedo MK-30 Mod 1
NAVSEA 6340-AA-MMA-010;	Technical Manual for OTTO Fuel II Safety, Storage, and Handling Instructions
NAVSEA SW 591-BO-MMO-010/WPN RECOV SYS;	Helicopter Weapon Recovery System MK-2 Mod 0/1
NAVSEA SW 515-AO-PRO-	Procedure Manual Localization and Recovery of 010/MK 46;
NAVSEA SW 900-AA-MMA-010/SURFRECNOCASE;	Technical Manual, Description, Operation, Maintenance and Depot Overhaul for Torpedo MK-48 Surface Recovery Nose Cage

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SW515-AO-PRO-030/MK 50; Procedures Manual for Post-Run Retrieval and Recovery of
MK 50 Torpedo

NAVSEA letter ser 06U2T/219 of 17 Oct 1990 – Subj: TORPEDO TUBE INSTRUMENTATION

2.6.2 REQUIREMENTS

2.6.2.1 The Contractor shall conduct AUTEK's weapon/target launch and recovery operations.

2.6.2.2 The Contractor shall maintain and operate all of AUTEK's weapon/target launch and recovery systems, including the Torpedo Tube Instrumentation (TTI) system, and related test equipment.

2.6.2.3 The Contractor shall conduct system alignment/calibration, specify equipment modifications and develop overhaul specifications for launcher/recovery systems.

2.6.2.4 The Contractor shall, during launch operations, be responsible for all phases of Weapon/Target launching including: launcher loading, umbilical, A + B cables and guidance wire connection/check-out; and initiation/operation of the launch sequence.

2.6.2.5 The Contractor shall perform torpedo/target retrieval services.

2.6.2.6 The Contractor shall follow response procedures in the event of a spill of OTTO Fuel or other hazardous substance during launch/recovery operations.

2.6.3 WORKLOAD FACTORS

2.6.3.1 Three (2) shipboard launch evolutions (e.g. separate vessels), or two (2) shipboard and one (1) helicopter launch evolution must be supportable simultaneously.

2.6.3.2 TTL MK-40 Target launches (in support of UK operations) are estimated at 5 per year

2.6.3.3 MK-30 Target launches may be estimated using the information presented in Chapter 2.4 and the following typical percentages: TTLs: 88%; helicopter launchers: 5%; and RANGER MK-59 Torpedo Tube: 7%.

2.6.3.4 Vehicle launches from the RANGER, are typically 20 from the MK-59 Torpedo Tube and 10 from the MK-32 Torpedo Tube.

2.6.3.5 Range User-launched exercise weapons are estimated at 700 per year.

2.6.3.6 The ratios of recoveries by platform type for all units are: 25% by helicopter and 75% by range vessel.

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2.6.3.7 All MK-30 Mobile Target launch and recovery operations shall be conducted in accordance with the ASW Mobile Target MK-30 Mod 1 Operational Guidance and the AUTEK Back-Up Recovery Plan.

2.6.4 KEY PERSONNEL/PERSONNEL QUALIFICATIONS

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

2.6.5 GOVERNMENT FURNISHED PROPERTY:

See Appendix 2.6

2.6.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE:

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Reliable launch and recovery of weapons, targets and test vehicles	2.6.2	Failures to achieve successful launch as a result of contractor errors are rare. Zero recovery failures.	Government review of contractor data and customer feedback

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2.7 ACOUSTIC TRACKING EQUIPMENT (ATE)

Acoustic Tracking Equipment (ATE) is also referred to as underwater tracking pingers. The pinger system consists of an electronic device powering a transducer that transmits acoustic signals into the water for on-range tracking of weapons (light and heavy weight weapons), MK-30 targets, and vessels.

The ATE function encompasses activities conducted at the Intermediate Maintenance Activities (IMAs), and the vessel transducer depot. Pinger IMAs daily activities consists of conducting failure analysis, logistical support, shipping and handling, scheduling, prepping, programming, testing, certifying, installing, removing, database entries, and submitting monthly reports to NUWC. Vessel transducer depot functions encompasses engineering investigations (mechanical and electrical), isolate problems, conduct repairs, testing, certification, recommend solutions and improvements, provide technical reports, packaging and shipping of the Raytheon Broad Band Low Frequency (BBLF) and 3 Wire Phase Coded Acoustic Transducer (3WPCAT) used at AUTEC, SOCAL, NUWC Detachment Hawaii, NUWC DIVKPT, and NUWC DIVNPT. See Appendix 2.7 as applicable.

The Government furnishes offices, lab spaces, and storage locations at the remote IMAs and the West Palm Beach Depot facility. In addition, the Government provides transportation, software, hardware, logistical support, cellular phones, training, and travel for the ATE functions. Heavy-weight weapons are supported from the Yorktown, VA IMA. Light-weight weapons are supported at NAS Jacksonville, FL, Andros Island, Bahamas, and Brunswick, ME. Vessel installations, removals, and rechecks are performed at Groton, CT, Norfolk, VA, Kings Bay, GA, Port Canaveral, FL, and Port Everglades, FL. Some foreign travel to Europe and the Bahamas is required to support special testing.

The two pinger systems most commonly used at AUTEC are the self-contained MK-84 MOD-2 installed in targets, weapons, unmanned vehicles, and the Advanced Shipboard Tracking Electronics Portable (ASTEP) connected to various transducers units used aboard submarines and surface vessels. ASTEP units interface with temporary hull-mounted primary tracking transducers specifically designed for 3-D tracking, such as:

- BBLF, 3WPCAT, and SSN-21 pod – submarines
- GM transducers – AUTEC's range vessels & UK vessels
- U.S. Navy shipboard fathometer transducers (AN/BQN-17, AN/BSY-1, AN/BSY-2, or AN/UQN) - Submarine and surface vessels backup tracking systems

A Portable Underwater Tracking Transducer (PUTT) is a self-contained, battery-powered device, attached externally on the ship's hull and is available for special tests/configurations. Other pinger configurations (Towed Pinger Assembly, Bounce Pinger, and WATT system) are available for specialized applications.

AUTEC's Weapons Ranges and AMSWR are normally operated in an asynchronous mode utilizing a Differential Phase Shift Keyed (DPSK) signal. The ranges can also operate in a synchronous mode, with a slight increase in tracking precision. Synchronous tracking also

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allows tracking with one less hydrophone (3 vice 4). In the synchronous mode, a portable timing system, synchronized with the range tracking system time base, is brought aboard ship and used to initiate the T-0 pinger pulse. For weapons, targets, etc., a cable must be connected to the pinger, and the pinger synchronized before launch through the A-Cable from a portable timing system.

Pinger operational reliability is absolutely critical to the success of any test conducted using the in-water tracking system. Because of this fact, AUTEK exercises stringent NAVSEA check-out, repair, calibration, and installation controls over all Pinger assets. ATE equipment handling and test equipment operations are governed by NAVSEA TEMPALTS, NAVSEA DWG documents, AUTEK OCDs and OMIs.

Yorktown, VA IMA provides heavy-weight weapons (MK-48, ADCAP). Jacksonville, FL IMA provides light-weight REXTORP weapons (MK-46 & MK-50). Brunswick, ME IMA provides light-weight weapons (MK-46 & MK-50). Andros Island, Bahamas provides MK-30 Targets and light-weight REXTORP weapons (MK-46 & MK-50)

2.7.1 APPLICABLE DOCUMENTS

NAVSEA OP 3660	Sonar Transmitter MK-72 Mod 0
NAVSEA TO 300-AM-ORD-010	Quality Systems Requirements and Methods for Navy weapons and Combat Systems
NAVSEA SW 591-AF-MM0-010	Electronics Portable Advance Shipboard /ASTEP Tracking (ASTEP)
NAVSEA TM SW 591-AD- MMO-010/SONXMT R84/1	Sonar Transmitter MK-84 Mod 1
NAVSEA DWG 7083762	Sonar Transmitter System MK-84 Mod 1 Bench Preparation Procedure, Phase-Coded and Tone Burst Modes
NAVSEA DWG 7083763, MK-84 Mod 1	Sonar Transmitter Installation and Removal procedures for MK-46 Mod 3/4/6 Exercise Torpedo
NAVSEA DWG 7087364	MK-84 Mod 1 Sonar Transmitter Installation and Removal Procedures for MK-46 REXTORP
NAVSEA DWG 7083765	MK-84 Mod 1 Sonar Transmitter Installation and Removal Procedures for MK-50 REXTORP
NAVSEA DWG 7083766	MK-84 Mod 1 Sonar Transmitter Installation and Removal Procedures for MK-48 Ties 3/4 Exercise Torpedo
NAVSEA DWG 7083767	MK-84 Mod 1 Sonar Transmitter Installation and Removal Procedures for MK-48 ADCAP

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	Exercise Torpedo
NAVSEA DWG 7083768	MK-84 Mod 1 Sonar Transmitter Installation and Removal Procedures for MK-30 Mobile Target
NAVSEA DWG 7083769	Battery Readiness Recheck for MK-84 Mod 1 Sonar Transmitters in Lightweight Torpedoes
NAVSEA DWG 7083771	Underwater Tracking System (UTS) Installations and Removals for STURGEON Class Submarines
NAVSEA DWG 7083772	Underwater Tracking System (UTS) Installations and Removals for LOS ANGELES Class Submarines
NAVSEA DWG 7083773	Underwater Tracking System (UTS) Installations and Removals for OHIO Class Submarines
NAVSEA DWG 7083774	Underwater Tracking System (UTS) Installations and Removals for SEAWOLF Class Submarines
NUWDIVKPT	Pinger 2000 Databade (P2K)
NAVSEA TEMPALT 2000114	SSN-688i Class BBLF/BBHF Installation
NAVSEA TEMPALT 2000049	SSN-688i Class 3WPCAT Installation
NAVSEA TEMPALT 194.01	SSBN-726 Class BBLF/BBHF Installation
NAVSEA TEMPALT 198.01	SSBN-726 Class 3WPCAT Installation
NAVSEA TEMPALT 21-98006	SSN-21 Class MK-72/MK-84 Installation

2.7.2 REQUIREMENTS:

2.7.2.1 The Contractor shall assign pinger signal formats; schedule assets; develop and submit weapon load-out sheets; and prep, program, test, certify, install, re-check, and remove pingers.

2.7.2.2 The Contractor shall schedule shipboard visits and promulgate an installation/removal schedule with subsequent installation/removal completion Naval message for each installation.

2.7.2.3 The Contractor shall arrange for any necessary support by local U.S. Navy or contract divers for pinger installation/inspection or removal. Conduct visits to shipyards to investigate vessels in dry-dock for future hull transducer installations or modifications

2.7.2.4 The Contractor shall maintain a pinger asset status and vessel availability schedule, updated daily.

2.7.2.5 The Contractor shall operate in accordance with the AUTECH ATE Quality Control/Quality Assurance Program

2.7.2.6 The Contractor shall develop, attend and present programmatic, technical, and failure analysis data at NAVSEA's Underwater Tracking Range meeting.

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2.7.2.7 The Contractor shall perform component-level repair, overhaul, modifications, and certification of BBLF and 3WPCAT transducers.

2.7.2.8 The Contractor shall provide mechanical and electrical engineering assessment of transducer damage and recommend solution(s) for each transducer repair.

2.7.2.9 The Contractor shall prepare/submit relevant modification proposals and engineering cost estimates and engineering change proposals.

2.7.3 WORKLOAD FACTORS:

2.7.3.1 Typically every weapon and target MK-84 Mod-2 pinger identified in chapter 2.4 and 2.5 is bench checked and tested within one working day following its return to inventory.

2.7.3.2 Nominal time required for a single bench check and test is estimated to be ½ work hour.

2.7.3.3 Typically vessel ASTEP and BBLF/3WPCAT/SSN-21 pingers identified in chapter 2.1 .2 require 1 hour to bench-check prior to an installation and 8 hours to complete. Additionally, factor two days of travel for vessel logistical support.

2.7.3.4 Typical component-level repair, overhaul, and certification of eight BBLF and eight 3WPCAT transducers are required annually. Additionally, these transducers require individual failure analysis and engineering assessment to determine appropriate repair, overhaul, and certification action.

2.7.3.5 Typically 240 labor hours for mechanical/electronic engineering tasks are required annually for all pingers

2.7.3.6 Appendix 2.7 lists a typical 12 month period of IMA MK-84 MOD-2 Pinger and the vessel pinger workload tasks.

2.7.3.7 Appendix 2.7 lists a typical 12 month period of IMA vessel Pinger workload tasks by ship class and geographic location

2.7.4 PERSONNEL:

Refer to Attachment #3 Personnel Qualification Sheets for required and recommended personnel.

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2.7.5 GOVERNMENT FURNISHED PROPERTY (GFP):

See Appendix 2.7

2.7.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE

PERFORMANCE OBJECTIVE	PWS PARAGRAPH	PERFORMANCE EXPECTATION	METHOD OF ASSESMENT
Timely and complete ATE preparation, installation and reporting	2.7.2	99% of task objectives met	Government review of contractor data and customer feedback

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2.8. TECHNICAL LABORATORY /SERVICES

AUTEC maintains an extensive inventory of general and special purpose portable electronic equipment for installation aboard AUTEC or Range User vessels and aircraft, or for deployment at specific locations to support test operations. This equipment encompasses all installed electronic navigation equipment aboard AUTEC's vessels, various beacons, transmitters, Participant Instrumentation Packages (PIPS), portable targets. This equipment provides targeting, environmental, underwater communications, platform identification and other data which is essential for the successful conduct of most range testing. The facility consists of shop, storage and office areas.

A descriptive list of Tech Lab systems is provided in Appendix 2.8.

2.8.1 APPLICABLE DOCUMENTS

None.

2.8.2 REQUIREMENTS:

2.8.2.1 The Contractor shall maintain, inspect, repair, calibrate, install/remove and operate AUTEC's Tech Lab equipment. The installation of some Tech Lab equipment on AUTEC and Range User vessels will require high-work on ship's masts.

2.8.2.2 The Contractor shall maintain the inventory of Tech Lab equipment.

2.8.3 WORKLOAD FACTORS

2.8.3.1 Removal, repair, and subsequent reinstallation of AUTEC vessel fathometers, LORANS, GPS receivers, radars, etc, found to be defective typically averages one item per week.

2.8.3.2 Typical installation, check-out, and operation of Tech. Lab equipment is estimated as follows:

<u>Equipment</u>	<u>Avg. Events/Mo.</u>	<u>Avg. Hrs/Event</u>
<u>A. Installation and Removal</u>		
LATR PIPs		
• Helicopters	6 (Peak 12)	2.0
• Vessels	3 (Peak 8)	3.0
Radar, Ship Navigation Equip.	4.0	16.0
Radar Beacons/HITS Transponders		
• Aircraft	4.0	2.5
• Vessels	5.5	3.3
Surface Ship WSAT		

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• Target Deployment	0.4	9.0
• Deck Transit (2)	0.4	4.0
• Additional Support for AEGIS-equipped ships	0.4	16.0
GPS/DGPS	1.7	5.0
SATS IV/MATS (2)	0.6	12.0
MAXI-SATS (3)	0.6	14.0

B. Operations

MARS	2.0	9.0
SATS IV/MATS (2)	0.6	16.0
MAXI-SATS (2)	0.6	16.0
XBTs	11	1.0
Portable Underwater Telephone	0.5	8.0
Sonobouy Simulator	1.25	12.0
Hydrographic Survey Fathometer	0.4	18.0
Deck Transit (2)	0.4	20.0

* Note: number in () indicates the minimum number of personnel necessary to perform the given task.

2.8.4 PERSONNEL

Refer to Attachment #3, Personnel Qualification Sheets for the required and recommended personnel

2.8.5 GOVERNMENT FURNISHED PROPERTY:

See Appendix 2.8

2.8.6 PERFORMANCE REQUIRMENTS SUMMARY TABLE:

PERFORMANCE OBJECTIVE	PWS PARAGRAPH	PERFORMANCE EXPECTATION	METHOD OF ASSESSMENT
Quality Tech Lab Services	2.8.2	Zero failures of certified equipment and/or instrumentation.	Government review of contractor data and customer feedback

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2.9. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT

The main functions of this chapter are to ensure the proper functioning and certification of AUTEC's test equipment, standards and weight handling equipment and to provide timing reference standards for use throughout the project.

CAL LAB: All of AUTEC's test equipment and standards, as well as mechanical, electrical, hydraulic, and pneumatic controls, gauges, etc., attached to operating equipment is periodically calibrated by the Standards and Calibration Laboratory (Cal Lab) to assure proper functioning and accurate operation. This equipment is assigned to the Cal Lab for purposes of acceptance, accountability, calibration, and repair. It is then issued for use. The Cal Lab is responsible for periodic re-calibration. The Cal Lab also maintains a pool of test equipment.

A representative list of test equipment is presented in Appendix 2.9. Equipment and instruments which AUTEC can not calibrate are returned to a manufacturer or qualified vendor for calibration.

WEIGHT HANDLING/NON DESTRUCTIVE INSPECTION: AUTEC's Weight Handling Equipment (WHE), Material Handling Equipment (MHE), and Ordnance Handling Equipment (OHE) require periodic inspection, load test and certification. A Weight Handling program and Non-Destructive Inspection (NDI) facility have been established that is capable of load testing the majority of AUTEC's WHE, MHE and OHE. Equipment beyond AUTEC's testing capability is sent to the manufacturer, qualified vendor, or other government activity for testing/certification.

AUTEC's NDI capabilities include dye penetrant, eddy current, and magnetic particle testing.

TIMING: The AUTEC Timing System (ATS) and AUTEC Sub-central Timing System (ASTS) provide AUTEC tracking instrumentation and data handling systems with precise time marks and high accuracy pulse rates for coherent data collection and processing. Time synchronization and frequency measurements are traceable to the U.S. Naval Observatory through Global Positioning System (GPS) satellites. The ATS and ASTS autonomously synchronize themselves to within one microsecond of Universal Time, Coordinated (UTC). The disciplined frequency reference in each system maintains the on-time performance. Time synchronization of most tracking and data processing hardware is accomplished with distribution of the Inter-Range Instrumentation Group type B (IRIG-B) code generated by the timing systems.

A detailed description of AUTEC's timing systems is described in Appendix 2.9.

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2.9.1 APPLICABLE DOCUMENTS :

ANSI/NCSL Z540-1	Calibration Laboratories and Measuring and Test Equipment General Requirements
NAVSEA OD 45854/ NAVAIR 17-35 MTL-1	Metrology Requirements List (METRL)
NAVFAC P-307	Management of Weight Handling Equipment
NAVSEA SW023-AH-WHM-010	Handling Ammunition and Explosives with Industrial Materials Handling Equipment (MHE)
NAVSEA SG420-AP-MMA-010	Periodic Testing Arrangements for Ordnance Handling Equipment
Naval Ships Technical Manual (NSTM) Chapter 589	Cranes
NAVSEA OP-4;	Weapons Handling Afloat
NAVSEA OP-5;	Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation, and Shipping
NSTM Chapter 613;	Wire, Fiber Rope, and Rigging

2.9.2 REQUIREMENTS:

2.9.2.1 The Contractor shall perform metrology, calibration, and WHE/MHE/OHE inspection and load test/certification programs and operate all timing system equipment.

2.9.2.2 The Contractor shall maintain records of all calibrations, inspections, tests and certifications performed for each individual piece of TMDE, WHE/MHE/OHE, NDI and timing systems equipment.

2.9.2.3 The Contractor shall ensure the immediate removal from service any equipment which has not been inspected/certified/calibrated within the established schedule, has failed in operation, shows evidence of physical damage, or has been determined to be outside its required performance limits.

2.9.2.4 The Contractor shall maintain a central pool of calibrated test equipment.

2.9.2.5 The Contractor shall provide WHE, MHE, OHE, test, inspection and certification services for shipboard and shore equipment at AUTECH.

2.9.2.6 The Contractor shall keep all Timing Systems synchronized to UTC within 1 microsecond.

2.9.2.7 The Contractor shall maintain a log of all atomic frequency standard maintenance.

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2.9.3. WORKLOAD FACTORS

2.9.3.1 The following table illustrates typical quantities of test equipment and reference standards with associated calibration and repair workloads:

<u>TYPE</u>	<u>ELECTRICAL</u>	<u>MECHANICAL</u>
Test Equipment, Qty	1000	750
Calibrations	50/mth	33/mth
Repairs	6/mth	1/mth
Standards, Qty	150	50
Re-certifications	6/mth	2/mth

2.9.3.2 83 WHE/MHE/OHE certifications are typically required per month.

2.9.3.3 13 Non-Destructive Inspections are typically required per month.

2.9.3.4 ATS and ASTS at all sites except WPB shall be operated 24 hours per day, 365 days per year.

2.9.3.5 The WPB ASTS shall be operated as directed in support of Government requirements.

2.9.4 PERSONNEL

Refer to Attachment #3, Personnel Qualification Sheets for the required and recommended personnel

2.9.5 GOVERNMENT FURNISHED PROPERTY (GFP):

See Appendix 2.9

2.9.6 PERFORMANCE REQUIRMENTS SUMMARY TABLE:

PERFORMANCE OBJECTIVE	PWS PARAGRAPH	PERFORMANCE EXPECTATION	METHOD OF ASSESMENT
Accurate test equipment and standards	2.9.2	No adverse impact due to improperly calibrated equipment, degradation of timing signals, or uncertified WHE/MHE/OHE.	Review of Contractor data, Government audit and inspections and customer feedback.

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2.10 DIVING

Diving/underwater work at AUTECH is necessary for inspection, maintenance, and repair of in-water hulls/machinery/facilities; installation and removal of range tracking devices and other hull-mounted fixtures and instrumentation; and the recovery of exercise weapons, targets, and other unmanned RDT&E vehicles.

Diving at AUTECH is limited to "no decompression" operations utilizing open-circuit Self Contained Underwater Breathing Apparatus (SCUBA) and techniques. All diving is strictly limited to 100 feet or less salt water, and to daylight hours.

The Government provides a diving shop, within the RSS at Site 1 on Andros Island, for the storage and maintenance of diving and diving related equipment and underwater photography and video equipment. A representative list of equipment is contained in Appendix 2.10.

2.10.1 APPLICABLE DOCUMENTS

- A. 29 Code of Federal Regulation (CFR), Occupational Safety and Health Standards, Subpart T, Commercial Diving Operations
- B. Article 227 (Requirements for Divers) of U.S. Navy NAVSHIPS (C) 389-0153, Radiological Controls (U)
- C. NAVSEA 0994-LP-01-9010/9020 for "Other Sources of Air"

2.10.2 REQUIREMENTS:

2.10.2.1 The Contractor shall provide Diving Services.

2.10.2.2 The Contractor shall provide the following: compressed air systems, SCUBA air equipment, requisite diving equipment, wet suits, diver masks, fins, as necessary to outfit Contractor diving personnel, and to provide for their safety. The Contractor shall maintain all dive equipment in an operational status, and spares in sufficient quantity to ensure performance of the tasks described at all times.

2.10.2.3 The Contractor shall maintain and operate GFP diving-related equipment and maintain the inventory of Government-provided consumables, expendables, and repair/spare parts.

The Contractor shall provide compressed air for use by non-contractor personnel when conducting Government approved diving operations.

2.10.2.4 The Contractor shall obtain air samples from the air supply on a semi-annual basis, and have such samples analyzed by a qualified independent laboratory to ensure that the air provided meets Air Purity Standards. Records of such tests shall be maintained for a minimum of three years and shall be made available for inspection as required.

STATEMENT OF WORK

2.10.3 WORKLOAD FACTORS

2.10.3.1 Diver support, including recovery of exercise weapons, mobile targets, and other unmanned test vehicles must be provided during daylight hours only.

2.10.3.2 Approximately 400 diver-supported evolutions of all types are required each year. Of this total, approximately 24 evolutions are scheduled remote from AUTECH.

2.10.3.3 Three to four times per year diver support is required for helicopter recovery of an exercise weapon or mobile target. Such events typically occur when a unit has been found to have deployed its air-flotation device, or when a unit is found to be floating horizontally. Standby diver assistance is scheduled whenever helicopter recovery of MK 30 targets is planned (approximately 75 times per year) although their actual use is extremely rare.

2.10.4 PERSONNEL:

Refer to Attachment #3, Personnel Qualification Sheets for the required and recommended personnel

2.10.5 GOVERNMENT FURNISHED PROPERTY:

See Appendix 2.11

2.10.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE:

Performance Objective	S OW Paragraph	Performance Expectation	Method of Assessment
Quality Diving Services	2.10.2	No test program delayed or cancelled due to unavailable or inadequate diving services.	Government review of monthly work reports and customer feedback.

STATEMENT OF WORK

CHAPTER 3.0

BASE OPERATIONS

STATEMENT OF WORK

3.0

This chapter of the PBSOW addresses Base Operations which includes all areas directly related to activities in support of infrastructure maintenance and indirectly related to activities in support of range customers.

BASE OPERATIONS PERFORMANCE REQUIREMENTS SUMMARY TABLE

Performance Objective	S OW Paragraph	Performance Expectation	Method of Assessment
Effective management of all Contractor Base Operations functions.	3.1 – 3.6	Personnel and resources are effectively utilized to achieve consistent internal and external customer satisfaction.	Monthly evaluation of the Contractor's performance data and customer feedback by the Government Base Operations Team Leader.

STATEMENT OF WORK

3.1 PUBLIC WORKS

Public Works encompass all functions relative to Facilities, Utilities, Transportation, Machine Shop, and Engineering required to sustain AUTECH in the performance of its mission and ensuring the welfare of assigned personnel.

Janitorial service encompasses minor maintenance and upkeep; damp mopping, stripping and waxing floors; shampooing rugs; moving furniture; washing windows; emptying trash receptacles; wiping down/washing furniture; etc.

Maintenance is construed to mean recurring, periodic, or scheduled work and inspections required to preserve the condition, operability, safety, habitability, or appearance of such property or equipment, so as to ensure its continued serviceability for its designated purpose.

Repair (e.g., corrective maintenance) is the correction of a condition, resulting from deterioration or breakage, which detracts from, or precludes such serviceability, and restores a facility or equipment to such condition that it may be effectively and efficiently utilized for its designed purpose.

Equipment Installation is the modification to real property (class 2) required solely for the installation of an item of personal property.

Construction is the erection, installation, or assembly, of new real property facility; or the addition, expansion, extension, alteration, conversion, or replacement of an existing real property facility; or the relocation of real property facility.

The Contractor provides maintenance and repair of real property and grounds for all of AUTECH's Andros Island sites as well as, the West Palm Beach airport facility. GSA provides the maintenance of AUTECH's West Palm Beach, FL, Headquarters facility.

The AUTECH work control system is the hub of all facility sustainment and modernization for the AUTECH Project. This system intelligently prioritizes facility deficiencies identified by inspections, scheduled preventive maintenance, service calls into either 1) shop repair orders or 2) facility engineering projects.

Non-hazardous solid waste materials that cannot be recycled are disposed of commercially at a landfill site on Nassau. The Bahamian commercial vendor provides collection and compaction equipment at Site 1, as well as transportation, once a month, between Site 1 and Nassau. Hazardous waste is collected separately and returned to CONUS for disposal.

AUTECH has a new Electrical Power Generating Plant which is automated requiring minimal maintenance and operations labor. Major maintenance on the systems is performed by an outside vendor under contract to the Government. Other diesel power generation equipment is operated at the down range sites.

The machine and welding shops are co-located in a building adjacent to the pier area at Site 1.

STATEMENT OF WORK

3.1.1 APPLICABLE DOCUMENTS:

MIL-STD-3004, Quality Surveillance for Fuels, Lubricants and Related Products
DoD 4145.19R-1; Storage and Materials Handling
DoD 4500.36-R; Management Acquisition and Use of Motor Vehicles
Department of Defense Unified Facilities Criteria
Unified Facilities Guide Specifications
OPNAVINST 4020.25 (Series); Controlling and Accounting for Ground Fuels
OPNAVINST 4100.5 (series); Energy Management
OPNAVINST 4790.2 (Series); The Naval Aviation Maintenance Program
OPNAVINST 11000.16, Command Responsibilities for Shore Activity land Facilities
OPNAVINST 11010.20 (series); Facilities Projects Manual
OPNAVINST 11010.34 (series); Instructions for Preparation and Submission of the Type "A"
Annual Inspection Summary and Narrative Assessment
COMNAVAIRLANT 13650.1(Series); Naval Air Systems Command Aircraft Maintenance
Material Readiness List Program
NAVSEA OP-5; Ammunition and Explosives Ashore, Safety Regulations for Handling,
Storing, Production, Renovation and Shipping
NAVSEA SW 020-AC-SAF-010/020/030; Transportation and Storage Data for Ammunition,
Explosives, and Related Hazardous Materials
SW020-AG-SAF-010, Navy Transportation Safety Handbook for Ammunition, Explosives,
and Related Hazardous Materials
NAVSEA SWO23-AH-WHM-010; Handling Ammunition, Explosives, and Hazardous
Materials with Industrial Material Handling Equipment
NAVFAC MO-213; Guidance on Solid Waste
NAVFAC MO-321.1; Maintenance Management of Public Works Utilities for Small
Activities
NAVFAC MO-322 Vols.1and 2; Inspection of Shore Facilities
NAVFAC (Publication) P-72; Department of the Navy Facility Category Codes
NAVFAC (Publication) P-78; Navy Facilities Assets Data Base Management System
Procedures Manual
NAVFAC (Publication) P-80; Navy Facilities Planning Criteria
NAVFAC (Publication) P-300; Management of Transportation Equipment
NAVFAC (Publication) P-306; Testing and Licensing of Weight Handling and Construction
Equipment Operators
NAVFAC (Publication) P-307; Management of Weight Handling Equipment
NAVFAC DM 2.2 Loads
NAVFACINST 11010.14 (Series); Project Engineering Documentation (PED) for
Proposed Military Construction Projects
NAVFACINST 11010.45, Comprehensive Regional Planning Instruction
NAVSUP (Publication) P-538; Management of Materials Handling Equipment

STATEMENT OF WORK

3.1.2 REQUIREMENTS:

3.1.2.1 The Contractor shall provide maintenance and repair, minor construction, facilities planning and class 1 and II property management, and pest control. 3.1.2.1

3.1.2.2 The Contractor shall maintain and operate a facilities work control system

3.1.2.3 The Contractor shall maintain the grounds and cleared areas at all of AUTECH's Andros Island sites giving consideration to guidelines contained in the AUTECH Comprehensive Eco-System and Cultural Resources Management Plan. Maintenance consists of such work as planting and cutting grass, planting and trimming bushes, and trees, removing debris, and general beautification.

3.1.2.4 The Contractor shall maintain the road and adjacent roadside between AUTECH's Site 1 on Andros Island and the Andros Town Airport. The road shall be maintained in a serviceable condition as required to allow safe passage of emergency vehicles.

3.1.2.5 The Contractor shall provide janitorial service for all of AUTECH's buildings and like structures, except housing units, on Andros Island. Cleaning shall be scheduled so as not to interfere with scheduled test operations. Janitorial personnel shall be trained on the hazards associated with asbestos.

3.1.2.6 The Contractor shall maintain Household Good Vans provided by the Government in ready-for-use condition. The Contractor shall be responsible for ensuring weather tightness, marking/identification, and delivery/pick-up of the vans.

3.1.2.7 The Contractor shall be responsible for the maintenance, repair, and cleanliness of the Contractor's airport terminal facilities provided under this contract, at the West Palm Beach International Airport.

3.1.2.8 The Contractor shall maintain a "self help" program of providing materials to all residents to perform limited repair/maintenance actions on their assigned quarters. This program must have sufficient controls to ensure that Government material is not used for unauthorized facility alterations or private use.

3.1.2.9 The Contractor shall maintain and operate a facility lock and key program. This includes locksmith services, and changing combinations, making keys, opening locked containers, and preparing items for reuse without degrading protection.

3.1.2.10 The Contractor shall ensure that no Class 1 or Class 2 Ozone Depleting Substances are intentionally vented to the atmosphere in the course of maintaining, servicing, repairing, or disposing of any air-conditioning appliances and refrigeration units.

3.1.2.11 The Contractor shall execute a pest control program. This includes storage, handling, and disposal of all related hazardous materials and waste; keeping records; and preparing/submitting all related reports.

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3.1.2.12 The Contractor shall maintain and operate base utilities including generation and distribution of electric power and potable water; collection and disposal of wastewater and solid waste and the destruction of classified waste; storage and distribution of petroleum, oil and lubricants (POL); and maintenance and repair of utility equipment, both portable and installed.

3.1.2.13 The Contractor shall maintain AUTECH's POL storage facilities, tanks, containment areas, and pipelines. The Contractor shall ensure that storm water drainage logs are maintained.

3.1.2.14 The Contractor shall contract for independent analysis services by a Florida state-certified environmental laboratory of AVJET fuel, potable water, wastewater and other environmental quality samples as required.

3.1.2.15 The Contractor shall ensure boiler water treatment, potable water quality, and sewage treatment plant effluent output are within established operating, safety, and health factors

3.1.2.16 The Contractor shall maintain a regular schedule for trash and garbage collection and removal.

3.1.2.17 The Contractor shall maintain a Qualified Recycling Program (QRP). To the degree economically feasible, items such as cardboard, glass, aluminum cans, scrap metal, lumber, and paper, etc., shall be collected and returned for recycling, reused, composted, or reclaimed.

3.1.2.18 The Contractor shall collect used non-hazardous engine oil and ship to CONUS for disposal through DRMO. Waste oil shipped to CONUS must meet specific standards as outlined in Section 17-710 of the State of Florida Environmental Protection Regulations.

3.1.2.19 The Contractor shall maintain and operate construction equipment, civil engineering support equipment (CESE), and material/weight-handling equipment (MHE/WHE).

3.1.2.20 The Contractor shall perform periodic test, inspection, preventive maintenance, routine sheet metal and body repairs, and repair-by-component replacement on AUTECH vehicles.

3.1.2.21 The Contractor shall provide a transportation training, certification program, and licensing program; issue appropriate licenses; and ensure that all personnel are qualified to perform their assigned tasks. The special equipment operator's license shall list the types of equipment the individual is qualified to operate. The Contractor shall maintain a record of this training, certification, and licensing received by each individual. Unqualified personnel shall not be permitted to operate equipment unless under qualified supervision, as part of the licensing program or upon written approval from the Government.

3.1.2.22 The Contractor shall control the dispatch and assignment of vehicles.

3.1.2.23 The Contractor shall ensure that factory-installed emission control equipment is intact and operational as part of periodic vehicular safety inspections.

STATEMENT OF WORK

3.1.2.24 The Contractor shall provide services to procure/dispose of vehicles as directed by the Government. All changes to the AUTECH's transportation fleet will require permission from the Government. Disposition of vehicles shall be approved by the Government.

3.1.2.25 The Contractor shall provide bus and base taxi service at Site 1. Scheduled on-base bus service shall be provided between all areas within Site 1. On-call base taxi or bus service shall be provided. Bus service to/from the Andros Town Airport shall be provided for all scheduled passenger flights provided under this contract. The Contractor shall provide scheduled bus service between Site 1 and the roundabout in Coakley Town.

3.1.2.26 The Contractor shall provide a minimum of civil, electrical, mechanical and architectural engineering capability for planning, limited design, technical studies, site approvals, bills of material, cost estimates, special studies, analysis, and construction management.

3.1.2.27 The Contractor shall provide ongoing assessment of AUTECH's test support capabilities.

3.1.2.28 The Contractor shall define modifications, new technical approaches, improvements, or other changes to AUTECH's test support instrumentation systems/equipment/core capabilities.

3.1.2.29 The Contractor shall control and coordinate the installation, integration, and check-out of new construction and major repairs.

3.1.2.30 The Contractor shall provide construction management for work being performed by Naval Military Construction Battalion to ensure that work performed per specification and of acceptable quality.

3.1.2.31 The Contractor shall provide environmental documentation for all construction or demolition projects.

3.1.2.32 The Contractor shall provide machine shop and welding services.

3.1.3 WORKLOAD FACTORS

3.1.3.1 Representative lists of typical assets and inventories are provided in Appendix 3.1. In all cases, actual inventories are those as supplied by the Government.

STATEMENT OF WORK

3.1.3.2 It is estimated that about \$4M will be invested annually for engineering, procurement support, subcontracting, and execution of facility construction and repair projects. Typical historical workload is:

Types of Projects	Estimated_Dollar Value	Approximate No.
Engineering Studies	N/A	10
Conceptual Plans	N/A	40
Preliminary Plans/Cost estimates	N/A	36
Major Repair	Greater than \$25K	20
Special project:	\$100K-750K	4
Special project: I&M	\$500K-5M	2
MILCON	>\$750K	1

3.1.3.3 Work control will operate 24 hours a day/7 days a week 52 weeks per year with emergency services only provided outside normal work hours.

3.1.3.4 Typically, service calls average 550 per month.

3.1.3.5 Facility deficiencies average 300 per year

3.1.3.6 Scheduled preventive maintenance average 300 per month

3.1.3.7 Work requests average 30 per month

3.1.3.8 Janitorial service shall be provided Monday through Friday (holidays excepted) and be on-Call during weekends and holidays.

3.1.3.9 Monthly power and water production averages are as follows:

<u>Site</u>	<u>Electrical</u>	<u>Reverse Osmosis Plant</u>
1	1,730,000 KWH	2,800,000 Gal.
2	100,000 KWH	0
3	75,000 KWH	0
4	60,000 KWH	0

3.1.3.10 Site 1 electrical power, potable water, and sewage systems operate 24 hours per day 7 days per week, 52 weeks per year.

3.1.3.11 AUTECH generates approximately 110 tons of trash and garbage, approximately 50% each of municipal and industrial waste.

3.1.3.12 Detailed records of the types and amounts of nonhazardous waste generated, disposed of, reused, recycled, or sold through the Defense Reutilization and Marketing Office (DRMO) shall be kept for a minimum of 7 years.

STATEMENT OF WORK

3.1.3.13 AUTECH Site 1 generates approximately 80K gallons of sewage per day, and approximately one-half ton of dry sewage sludge per year. The plant is rated at 150K per day

3.1.3.14 Critical vehicles shall be available 96% of the 24 hours per day 7 days per week, 52 weeks per year.

3.1.3.15 Main Base bus service shall be provided at intervals of relative passenger convenience between 0600-2200 Monday through Friday, and 0800-2000 on Saturdays, Sundays and Holidays.

3.1.3.16 Airport bus service shall be in accordance with scheduled passenger flights to/from Andros Town Airport.

3.1.3.17 On-call, on base, taxi/bus service shall be available 2 shifts per day, 365 days per year.

3.1.3.18 The typical workload for machine shop services is estimated at 45 requests per month, each requiring less than one work-day to complete.

3.1.3.19. Typical workload for welding services is estimated at 25 requests per month, each requiring two work-days to complete..

3.1.4 PERSONNEL

Refer to Attachment #3, Personnel Qualification Sheets for the required and recommended personnel

3.1.5 GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 3.1

3.1.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Effective work control	3.1.2	Open or uncorrected shop repair orders shall not exceed 90	Review of Contractor's performance data.
Critical services and equipment availability	3.1.2	Total unscheduled interruptions in critical services will be less than 5 occurrences per month	Outage reporting. Independent auditor will verify Outage reports accurately reflect performance.
Contract performance compliance.	3.1.2	Open or uncorrected deficiencies/findings shall not exceed 3 by the end of the period	Inspections and surveys against Contractor responsibilities checklist

STATEMENT OF WORK

3.2. MARINE OPERATIONS

Marine Operations encompasses those functions associated with the maintenance and operations of AUTECH's marine assets in support of the AUTECH mission. Marine Operations assets consist of ocean-going vessels, various small boats, ancillary deck equipment, and private aids to navigation (ATON) that mark the channels to AUTECH's various sites. With the exception of various small boats, all of AUTECH's vessels are stationed at Site 1.

AUTECH's vessels are typically employed within the local Operations Areas adjacent to Andros Island. Their primary use is meeting scheduled test requirements at AUTECH. Test requirements include:

- launching and retrieving exercise torpedoes, mobile targets, and other similar test vehicles
- acting as electronics support platforms and to provide other target services
- transferring personnel to and from Range User vessels
- transferring cargo between the various Andros Island sites

The larger sea-going vessels, such as the M/V RANGE ROVER and the M/V RANGER, are additionally employed to support open-ocean acoustic, environmental, geophysical, oceanographic, and other RDT&E programs.

A Ramp Recovery System is installed on the M/V RANGER and M/V RANGE ROVER to accomplish day or night recovery operations during periods of high winds (to 30 knots). Nominally one vessel equipped for launch and recovery support is required on range during exercise weapon firing evolutions.

Routine minor repair, alteration and maintenance of all vessels, various small boats, ancillary deck equipment are conducted at the Site 1 facilities. Major repairs and overhauls are conducted at commercial shipyards.

Marine Operations is governed by various regulatory bodies including USCG and internal AUTECH documents. The M/V RANGE ROVER and M/V RANGER are required to hold USCG assigned load lines. Various Navy requirements are specifically placed on ships' equipment involved in weapons handling.

The Government requires a primary target recovery platform be on-range during times that MK-30 Target(s) are in-water and that a secondary recovery platform be available. Normally this requirement is met by having a helicopter on stand-by at Site 1 (daylight operations) or a vessel available to get underway. In most cases, MK-30 Targets are employed in conjunction with exercise weapon firings, except for MK-30 Target Engineering Runs.

A rendezvous operation is the transfer of the personnel and material between shore and ships underway. Rendezvous operations are normally conducted in the vicinity of Site 1, although they may be required anywhere within AUTECH's area of operations.

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A backhaul is the ocean transport of exercise weapons and/or other cargo or material, between the Andros sites and CONUS using AUTECH Marine Operations assets and not the MSC barge.

Downrange logistic support is the movement of personnel and material between Site 1 and the downrange sites 2, 3, 4, 7.

3.2.1 APPLICABLE DOCUMENTS:

- ◆ Title 46 CFR Shipping
- ◆ OPNAVINST 4780.6D
- ◆ American Bureau of Shipping (ABS) Standards

3.2.2 REQUIREMENTS:

3.2.2.1 The Contractor shall maintain and operate all AUTECH's vessels

3.2.2.2 The Contractor shall ensure that all of AUTECH's vessels are in an operational status at all times except during scheduled maintenance periods authorized by the Government. Ancillary deck equipment, when not needed for test operations support, shall be properly preserved from the elements and maintained in a ready-for-use condition.

3.2.2.3 The Contractor shall prepare specifications, work packages, solicit bids, and subsequently be responsible for shipyard overhaul and upkeep of AUTECH vessels. The Contractor shall not make changes to specifications or change orders without approval by the Government.

3.2.2.4 The Contractor shall perform only limited maintenance of AUTECH's private ATON. Such maintenance shall include replacement of lenses, battery packs, and other internal components of lighted aids. Major maintenance of large off-shore ATON buoys is performed by the USCG.

3.2.2.5 The Contractor shall maintain the hurricane moorings located in the harbor at Site 1 Andros Island.

3.2.2.6 The Contractor shall ensure the trim and stability booklet is onboard each AUTECH vessel, except for HAMMERHEAD vessels and LCM (8)-6775. The captain (master) and mate of each vessel must be familiar with this booklet and be able to perform requisite calculations and perform necessary corrections to ensure safe vessel trim and stability under a variety of conditions.

3.2.2.7 The Contractor shall be responsible for adherence to restrictions on shipboard trash, garbage, and sewage discharge as may be prescribed by local laws, rules, or regulations or by treaty agreement (e.g., MARPOL V or subsequent) and by U.S. Navy rules or regulations as applicable to the area of operation.

3.2.2.8 The Contractor shall ensure navigation charts, pilotage instructions, and other similar documents on board all vessels are up-to-date

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3.2.2.9 The Contractor shall transport supplies, materials, vehicles, water, personnel between Site 1 and AUTECH's downrange sites

3.2.2.10 The Contractor shall take all precautions to prevent overboard fuel/oil spills or discharges and perform spill response and spill clean up of any spills on the water that occur. The Contractor shall perform boom deployment and spill abatement activities during fueling and defueling operations at Harrison Wharf and the down range sites.

3.2.2.11 The Contractor shall perform emergency and rescue operations within AUTECH operations areas.

3.2.2.12 The Contractor shall perform Range User surface ship garbage collection services.

3.2.2.13 The Contractor shall maintain the AMS system for existing vessels, ancillary deck equipment and on-board systems, equipment

3.2.3 WORKLOAD FACTORS

3.2.3.1 Representative lists of typical assets and inventories are provided in Appendix 3.2. In all cases, actual inventories are those as supplied/approved by the Government.

3.2.3.2 Vessel upkeep's are normally scheduled every 3 months. Vessel overhauls are normally scheduled every 2 years. Upkeep's are typically limited to 10 days and are done at Site 1. Overhauls are typically limited to 120 days total time off-range unless otherwise approved by the Government and are done at a shipyard. Three overhauls or up to 200 days in the shipyard is normally required during any year..

3.2.3.3 Typically 12 rendezvous services are required per month.

3.2.3.4 AUTECH has 69 ATON total.

3.2.3.5 AUTECH has 4 hurricane moorings at Site 1.

3.2.3.6 Typically 2 roundtrip downrange logistics runs per week will be scheduled for the HAMMERHEAD. These trips will normally be completed during the workweek.

3.2.3.7 Typically 2 roundtrip downrange logistics runs per week will be scheduled for the LCM(8)-6775. These trips will normally be completed during the workweek

3.2.3.8 Typically 300 underway recovery operations will be required each year. During these, typically 225 MK-30 Targets evolutions will be supported which require additional loading and standby platform considerations.

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3.2.3.9 The estimated average number of manning hours per month for each vessel is as follows:

- M/V RANGE ROVER = 250
- M/V RANGER = 200
- RANGEMASTER = 225
- HAMMERHEADs I and II = 200
- LCM(8)-6775 = 150.

3.2.3.10 The M/V RANGER and M/V RANGE ROVER are deployed for typically 30 days in support of open-ocean RDT&E or other projects no more than one time per year for each vessel.

3.2.3.11 Small boat maintenance requirements may be estimated from the following. Actual inventories are those as supplied/approved by the Government

- Three small boats (e.g., typically 17-foot Boston Whalers or equivalent) with trailers and outboard motors are distributed among the various Andros Island downrange sites.
- One 22-foot conventional hull and three 22-foot rigid hull inflatable (ALMAR) boats with outboard motors.
- A 22-foot fiberglass boats with outboard motors
- Two 19-foot Boston Whalers with outboard motors and one 19-foot oil-boom deployment platform boat powered by two outboard motors.

3.2.3.12 Typically 10 Range User surface ship garbage collection runs per year

3.2.4 PERSONNEL

Refer to Attachment #3, Personnel Qualification Sheets for the required and recommended personnel

3.2.5 GFP

Refer to Appendix 3.2.

3.2.6 Performance Requirements Summary Table

Performance Objective	S OW Paragraph	Performance Expectation	Method of Assessment
Effective and efficient management of AUTECH's marine assets	3.2.2	Zero failures to meet scheduled commitments (weather/sea state limitations excepted).	Contractor Assessment Data, Government Audits/Inspections and Customer Feedback
Quality maintenance of vessels	3.2.2	The number of open or uncorrected deficiencies that are either greater than 30 days old or uncorrected at assigned upkeep <2.	Contractor Assessment Data, Government Audits/Inspections and Customer Feedback

STATEMENT OF WORK

3.3 AIR OPERATIONS

Air Operations encompass all functions relative to Air Shuttle, Air Lift, and aircraft Support Equipment (SE) operations required to sustain AUTEC in the performance of its mission and ensure the welfare of assigned personnel.

Air Lift operations are limited to daylight hours under Visual Flight Ratings only. No helicopter flight operations are to be conducted above 10,000 feet. Air lift at AUTEC encompasses a variety of different operations:

1. Launch and recovery of mobile targets
2. Recovery of expended exercise torpedoes and other test vehicles.
3. Use as a photographic platform
4. Use as a tracking sensor target.
5. Transfer of data to/from ships and personnel/cargo between sites,
6. Transfer of personnel to/from other locations in the Bahamian Islands or CONUS.
7. Participation in "Good Samaritan" operations such as searching for accident victims/missing persons or relief efforts subsequent to a natural disaster or other mishap/calamity.

AUTEC maintains various items of aircraft SE. AUTEC is an Organizational-Level maintenance facility for this equipment. Items with repair needs that exceed local authority are sent to the Aircraft Intermediate Maintenance Department (AIMD), Mayport, FL.

For the purpose of satisfying the requirements of this specification, the following assets are made available for acquisition:

1. An air terminal building located adjacent to the PBI Airport
2. Two Contractor owned Beechcraft 1900 aircraft;
3. Two Contractor owned S-61N, Sikorsky helicopters

3.3.1 APPLICABLE DOCUMENTS:

Federal Aviation Administration (FAA) Regulations parts 23.853, 25.853 and 29

DoD Directive 4500.53 (Series), as published in 32 CFR Part 861

Federal Aviation Regulation (FAR) Parts 91, 133 and 135.

32 Code of Federal Regulations (CFR); Part 861. Department of Defense Commercial Air Carrier Quality and Safety Review Program

49 Code of Federal Regulations (CFR); Part 830. DOT Regulations on Reporting of Aircraft Accidents and Incidents

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3.3.2 REQUIREMENTS

3.3.2.1 The Contractor shall provide maintenance and operation of the air shuttle aircraft used to transport personnel and cargo between the Andros Island, Bahamas, Andros Town Airport and the AUTECH Palm Beach International Airport terminal.

3.3.2.2. The Contractor shall provide aircraft utilized for the Andros/West Palm Beach service, with, as a minimum, the following specifications:

1. 19 available passenger seats
2. 4,400 pounds of total payload
3. FAA certified and approved for day and night, VFR, and IFR operations.
4. Able to operate, with a payload of at least 4,400 pounds, in 35 degrees centigrade from the 4,300 foot-long runway at the Andros Town Airport.
5. Equipped to provide MEDEVAC service

3.3.2.3 The Contractor shall be fully responsible for obtaining all required landing rights and clearances, airport operating leases, and for paying any applicable fees.

3.3.2.4 The Contractor's Air Operations shall be responsible for all aspects of Air Shuttle and Air Lift logistics including acquisition, delivery, storage, and control of aircraft inventory. Unless Air Operations are supplied as a packaged service, the Contractor shall develop and maintain an inventory of Government furnished consumables, expendables, and repair/spare parts to support AUTECH's aircraft operations.

3.3.2.5 The Contractor shall develop, maintain and operate in accordance with an AUTECH Aviation Pre-Mishap Plan.

3.3.2.6 The Contractor shall provide crash-rescue, refueling services and ground power to visiting aircraft at the Site 1 heliport and at the Andros Town Airport.

3.3.2.7 The Contractor shall adhere to a Government-furnished daily schedule to provide transportation of personnel and freight between West Palm Beach, Florida and Andros Island, Commonwealth of the Bahamas. Daily flight schedules are subject to change to meet customer demand.

3.3.2.8 The Contractor is allowed, when shuttle aircraft are not fully engaged in direct mission support, to use the aircraft to enhance Contract cost recoveries. The Contractor shall develop policies to utilize space-available seating, for purposes such as Welfare and Recreation. The Contractor shall collect fees for such usage. In addition, persons (except those assigned to AUTECH) traveling to/from Andros Island on official Government business are also charged a passage fee established by the Government. The Contractor shall accept payment and issue an appropriate receipt. Fees collected shall be reported/credited to the Government.

3.3.2.9. The Contractor shall provide maintenance and operation of air lift rotary wing aircraft capable of heavy lift operations over water

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3.3.2.10 The Contractor's air lift capability shall comply with the following specifications:

1. Configured with hard points and external sling capable of lifting 5,000 lb.
2. Configured with a rescue hoist, cable, and hook capable of lifting 600 lb.
3. A ferry range of 300 nautical miles.
4. Able to lift 4,000 pounds of cargo and transport it 75 miles
5. In a passenger configuration, lift a crew of three and a mixed passenger/cargo internal payload of 3000 pounds plus fuel, and fly 200 nautical miles, without refueling, with a 20-minute fuel reserve.
6. In an external load configuration, lift a crew of three, plus fuel, fly 75 nautical miles, enter a search/loiter for 10 minutes, pick up an external load of 4200 pounds, and return to original departure point, without refueling, with a 20 minute fuel reserve.

3.3.2.11 The Contractor shall use the helicopters to perform inter-site/inter-facility logistics support only upon approval of Government.

3.3.2.12 The Contractor shall maintain all external load lifting mechanisms, including the rescue hoist, rescue hoist cable, rescue hoist hook, external sling harness, and external sling hook. These mechanisms will be provided periodic weight testing and certification in accordance with any relevant OSHA or FAA approved standards. The Government will provide all external load mechanisms beyond the rescue hoist hook and sling hook, to include pendants, recovery cages, and launch devices.

3.3.2.13 The Contractor shall modify/reconfigure the helicopters, as requested by the Government, to the extent that Federal Aviation Regulation requirements and current FAA air-worthiness regulations would not be impacted.

3.3.2.14 The Contractor shall perform preventive maintenance on aircraft SE.

3.3.2.15 The Contractor shall only issue aircraft SE to Range Users that have in their possession a valid U.S. Navy Support Equipment operator's license as described in OPNAVINST 4790.2 Vol. I.

3.3.3 WORKLOAD FACTORS

3.3.3.1 Representative lists of typical assets, inventories and a schedule example are provided in Appendix 3.3. In all cases, actual inventories are those as supplied/approved by the Government.

3.3.3.2 The total number of passengers, traveling daily between West Palm West Palm Beach, FL and Andros Island is estimated to vary between 20 and 120 with an average of 70 one-way passenger trips per day.

3.3.3.3 The average amount of cargo (baggage, mail, newspapers, other high-priority items) to be air-transported monthly between West Palm Beach, FL, and Andros Island is estimated to vary between 20 and 60 tons. The average (per flight) cargo weight from WPB to ASD is 529 lbs., and from ASD to WPB is 218 lbs.

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3.3.3.4 It is estimated that an average of two Range User cargo-only flights (one to two tons each) will be required each month, with a peak of five in any one month.

3.3.3.5 Helicopter support will be required for 52 weeks per year including operations during periods of Range Stand-Downs and Range Maintenance Intervals.

3.3.3.6 It is estimated that a yearly average of 50 helicopter flight hours per month will be required, with an estimated peak of 75 flight hours per month.

3.3.3.7 Aircraft SE shall be available 24 hours per day.

3.3.3.8 It is estimated that visiting Range User helicopters will average four squadrons per month, staying up to 4 days each.

3.3.4 KEY PERSONNEL:

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

3.3.5 GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 3.3

3.3.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE:

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Dependable and well maintained Air Shuttle service	3.3.2	At least 95% of scheduled departures shall occur no more than 15 minutes past documented time.	Contractor Assessment Data, Government Audits/Inspections and Customer Feedback
Competent and reliable Air Lift services	3.3.2	Successful accomplishment of at least 95% of scheduled missions.	Contractor Assessment Data, Government Audits/Inspections and Customer Feedback

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3.4 LOGISTICS

Logistics encompasses all functions relative to acquisition, delivery, warehousing, and control/disposition of Government-furnished property.

The Contractor will have access to federal supply resources, including the Defense Supply Center Philadelphia (dry, freeze, and chill subsistence items), the Defense Supply Office, Jacksonville (produce), the Defense Energy Support Center (fuel), and the Federal Supply System. The Federal Supply System is AUTEC's preferred source of material procurement. The cost of shipping Federal Supply-procured material via the Defense Transportation Service is paid for by Defense Logistic Agency (i.e., the cost of shipping is included in the acquisition cost).

Delivery is construed to mean the movement of or transportation of material to the various sites and storage locations and not to the end user.

The roll-on, roll-off (RO/RO) barge, RO/RO vans and stevedore services operating out of Port Canaveral (PCAN) are provided through separate Government contracts. The Contractor provides these services on ASD.

3.4.1 APPLICABLE DOCUMENTS:

Federal Acquisition Regulations (FAR)
Defense Federal Acquisition Regulations (DFAR) Part 245
DOD 4161.2-m; DOD Manual for the Performance of Contract Property Administration
DoD Manual 4160.21-m; Defense Material Disposal Manual
DoD Manual 4160.21-m-1; Defense Demilitarization Manual
Navy Acquisition Procedures Supplement (NAPS)
NAVSUP Publication P500 Navy Policy and Standards for Supply Management
NAVSUP P-485 Volume III Supply Procedures – Ashore
Title 49 CFR Parts 100-185 Hazardous Material Regulations
HM-181 Department of Transportation (DOT) Hazardous Material Transport Regulations
DoN Memorandum , dtd 5 Sept 1996 Department of the Navy Affirmative Procurement Program
for items Containing Recovered Material
NAVSUP Pub 572 Joint Service Manual (JSM) for Storage and Material Handling
NAVSUPINST 4440.128D Storage and Handling of Liquefied and Gaseous Compressed Gasses
and Their Full and Empty Cylinders
NAVSUPINST 4200.85C Department of the Navy Simplified Acquisition Procedures
Defense Transportation Regulation (DTR) DoD Regulation 4500.9-R
Part II – Cargo Movement
Part IV – Personal Property
Part V - DoD Customs and Border Clearance Policies and Procedures

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3.4.2 REQUIREMENTS:

3.4.2.1 Contractor shall perform all Logistics tasks. Such services encompass (but are not limited to) identifying, procuring, transporting, storing, issuing, packaging, shipping, and disposing of equipment or material.

3.4.2.2 The Contractor shall operate in accordance with a property control system and be responsible and accountable for all Government property. Property control procedures must be approved by the Government Property Administrator.

3.4.2.3 The Contractor shall return identified depot-level reparable, mandatory turn-in, and not-ready-for-issue materials to the Federal Supply System/designated activity and assure that proper records are kept and proper credit for the return is received.

3.4.2.4 The Contractor shall operate in accordance with the AUTC Hazardous Material Control and Management (HMC) Program and AUTC's Hazardous Material Utilization Program. The Contractor shall provide total life cycle control of all hazardous material obtained for use at AUTC. Hazardous materials and hazardous waste shall be identified, labeled, handled, stored, prepared for shipment, manifested, transported, and disposed of in accordance with the Final Governing Standards. The only hazardous materials authorized for procurement are those contained in AUTC's Authorized Use List (AUL).

3.4.2.5 The Contractor shall provide the Government with obligation and receipt data for all Federal Supply transactions.

3.4.2.6 The Contractor shall provide purchasing in accordance with a Government approved Purchasing System.

3.4.2.7 The Contractor shall obtain Government authorization for all procurement actions with a cost greater than \$2,500 prior to obligation of funds. Copies of procurement actions less than \$2,500 shall be submitted to the Government daily.

3.4.2.9 The Contractor, in cooperation with the U.S. Army Military Transportation Management Command (MTMC), U.S. Air Force, Military Sealift Command (MSC), and Naval Ordnance Technical Unit shall ensure proper shipment of materials to/from AUTC West Palm Beach, FL, Port Canaveral, FL, and AUTC's Andros Island facilities.

3.4.2.10 The Contractor shall report the condition of material delivered by vendors prior to transfer to MTMC.

3.4.2.11 The Contractor shall prepare transportation control and movement documentation.

3.4.2.12 The Contractor shall prepare shipping export documentation.

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3.4.2.13 The Contractor shall transport hazardous or ordnance materials or items, or sample quantities of hazardous waste. Bulk quantities of hazardous waste will be shipped via MSC barge or other appropriate means.

3.4.2.14 The Contractor shall ensure the proper transportation of household goods (HHGs), unaccompanied baggage and privately owned vehicles belonging to Government personnel transferring to/from Andros Island.

3.4.2.15 The Contractor shall provide for all mail handling at AUTECH's West Palm Beach, FL, facility and at all Sites on Andros Island.

3.4.2.16 The Contractor shall maintain and operate a system of warehouses.

3.4.2.17 The Contractor shall manage stock levels based on a consumption analysis and budgetary constraints.

3.4.2.18 The Contractor shall inventory all Government property consistent with the approved government property control procedures. A complete physical inventory shall be conducted upon assumption of responsibility and upon completion, or termination, of this contract, or as directed by the Government Property Administrator.

3.4.2.19 The Contractor shall review, identify, and report idle and excess government property.

3.4.2.20 The Contractor shall promptly report all incidents of loss, damage, or destruction of government property to the Property Administrator. The report shall be in sufficient detail to allow for a relief of responsibility or liability determination by the Property Administrator.

3.4.2.21 The Contractor shall dispose of Government property as directed by the designated Plant Clearance Officer.

3.4.3 WORKLOAD FACTORS

3.4.3.1 Typical monthly open purchases procurement actions: 420

3.4.3.2. Typical MILSTRIPs monthly procurement actions: 400

3.4.3.3. Estimated number of tagged Government Property items: 15,000

3.4.3.4. Estimated number of item-types in inventory: 14,000

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3.4.3.5. Estimated average amount of material moved monthly to/from Andros Island:

- | | |
|---|-----------|
| 1. Mail WPB to ASD: | 7 tons. |
| 2. Mail ASD to WPB: | 1.5 tons. |
| 3. Cargo (via MSC) PCAN to ASD: | 500 tons |
| 4. Cargo (via MSC) ASD to PCAN: | 20 tons |
| 5. Cargo to/from ASD via C-130 or charter aircraft: | 20 tons. |

3.4.3.6. Approximately 40 shipments of HHG either to or from Andros belonging to Government personnel will be required annually. Approximately 100 shipments of HHG either to or from Andros belonging to Contractor employees will be required annually. Actual numbers vary with attrition.

3.4.3.7. Estimated warehouse issues from inventory per month:

- | | |
|-------------------------------|-------|
| 1. Project material warehouse | 80 |
| 2. All Andros general stores | 1,670 |
| 3. Material in work centers | 5 |
| 4. WPB general stores | 115 |

3.4.3.8 Estimated number of monthly Government property dispositions: 250

3.4.3.9 Estimated amount of AUTECH-generated waste handled by Logistics per year:

1. 25,000 lbs. general hazardous waste
2. 100 lbs. biohazard waste
3. 20 tons OTTO fuel contaminated liquid and solid waste

3.4.4 PERSONNEL:

Refer to Attachment #3 for Personnel Qualification Sheets for required and recommended personnel.

3.4.5 GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 3.4

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3.4.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE

Performance Objective	S OW Paragraph	Performance Expectation	Method of Assessment
Inventory accuracy	3.4.2	Physical inventory of material (line items) must be $\geq 95\%$ Physical inventory of assets (ST / STE / IPE / OPE / APP) must be $\geq 98\%$	Contractor Assessment Data, Government Audits/Inspections and Customer Feedback
Effective and efficient husbanding of Government assets/materials	3.4.2	Open or uncorrected deficiencies/findings shall not exceed 3 at any one time	Contractor Assessment Data, Government Audits/Inspections and Customer Feedback

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3.5 ENVIRONMENTAL AND SAFETY

Environmental and Safety Programs encompass all functions relative to prevention, protection, and compliance assurance required to sustain AUTECH in the performance of its mission and ensure the welfare of assigned personnel. The AUTECH Environmental Program must meet all CONUS requirements for example:

- Air Pollution Prevention,
- Water Pollution Prevention,
- Potable (Ground) Water System Protection,
- Oil and Hazardous Substance Spill Contingency Planning,
- Oil Pollution Prevention,
- Pesticide Pollution Prevention,
- Noise Pollution Prevention,
- Pollution Prevention Ashore and Afloat,
- Hazardous Materials Control and Management,
- Asbestos Management,
- Recycling (e.g., Resource Recovery),
- Hazardous/Non-Hazardous and Solid Waste Management.
- Ozone Depleting Substance (ODS)

The Environmental Program is structured and operated in compliance with applicable Presidential Executive Orders, U.S. Government and State of Florida laws and regulations, and Navy Environmental Protection Instructions and Directives. The Program seeks to conserve natural resources, and to prevent any environmental pollution while simultaneously maximizing operational readiness.

AUTECH does not have an Environmental Protection Agency (EPA) permitted Treatment, Storage and Disposal Facility (TSDF). AUTECH does, however, provide various hazardous waste accumulation and storage facilities on Andros Island.

The Safety Program is structured and operated in compliance with applicable laws and regulations. The Program seeks to increase the efficiency of daily operations through prevention of lost-time accidents, by providing a healthy work environment for the general safety of persons and property in compliance with all laws, statutes, and regulations as may apply.

3.5.1 APPLICABLE DOCUMENTS:

National Environmental Policy Act (NEPA)
National Fire Protection Association (NFPA)
Code 29 Code of Federal Regulations (CFRs)
Occupational Safety and Health Administration (OSHA) Regulations (applicable parts)
33 CFR Parts 125-199; U.S. Coast Guard Regulations for Pollution Prevention Afloat
40 CFR; EPA Standards

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49 CFR Parts 100-177; Department of Transportation (DOT) regulations for transport of Hazardous material and waste
HM-181; DOT Hazardous Material Transport Regulations
FAR Part 31, Para. 31.205-15; Fines, penalties, and mischarged costs.
DoD 4160.21M; Defense Utilization and Marketing Manual (DoD Disposal Manual)
DODINST 6055.7(Series); Mishap Investigation, Reporting and Record Keeping
DoN Memorandum, dtd 5 Sept 1996; Department of the Navy Affirmative Procurement Program for Items Containing Recovered Materials
Final Environmental Review (Adoption of a Range Management Plan for the Atlantic Undersea Test and Evaluation Center (AUTEC), Andros Island, Bahamas) dtd 5 Sept 1997; Approved by CNO (N456C) 30 Nov 1997
Final Governing Standards for Andros Island; Prepared by Commander in Chief, U.S. Atlantic Fleet (CINCLANTFLT)
JAGINST 5800.7C Chapter XII; Admiralty Claims
OPNAVINST 4100.5D; Energy Management
OPNAVINST 4110.2 (series); Hazardous Materials Control and Management
OPNAVINST 5090.1 (series); Environmental and Natural Resources Protection Manual
OPNAVINST 5090.2 (series); Management of Ozone Depleting Substances
OPNAVINST 5100.23 (series); Navy Occupational Safety and Health Manual (NAVOSH)
OPNAVINST 5102.1 (Series); Mishap Investigation and Reporting
OPNAVINST 6250.4 (series); Pest Management Programs
OPNAVINST 8023.2 (Series); U.S. Navy Explosives Safety Policies, Requirements and Procedures (Department of the Navy Explosives Safety Policy Manual)
NAVSEA S6340-AA-MMA-010; Technical Manual for OTTOFUEL II
NAVSEA OP-5; Ammunition and Explosives Ashore Safety Regulations for Handling, Storing, Production, Renovation, and Shipping
NAVSEA S 6470-AA-SAF-10; Technical Manual Naval Sea Systems Command - Gas Free Engineering Program
NUWC DIVNPTINST 5100.5 (Series); NUWC Division Newport Safety Manual
NUWC DIVNPTINST 5100.6 (Series); AUTEC Range Safety Manual
State of Florida Environmental Protection Regulations; Sections 62-710 and 62-712
American National Standards Institute (ANSI) (Z88.2); Practices for Respirator Protection
American National Standards Institute (ANSI) (Z87.1-1989); Eye and Face Protection
American Conference of Governmental Industrial Hygienists, Inc., Committee on Industrial Ventilation; A Manual of Recommended Practices

3.5.2 REQUIREMENTS:

3.5.2.1. The Contractor shall maintain and operate in accordance with the AUTEC Environmental Program. The Contractor shall report incidences of non-compliance to the Government.

3.5.2.2. The Contractor shall maintain and operate in accordance with the AUTEC Energy and Water Conservation Program specifically the conservation of electrical power, water, and fuel. Detailed records shall be maintained to verify that conservation techniques are adequate to meet required goals. These records shall be kept for a minimum of 5 years.

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3.5.2.3. The Contractor shall perform routine sampling of all potential waste streams, ground water monitoring wells, and soil, and have such samples analyzed by a Florida State Certified Laboratory.

3.5.2.4. The Contractor shall maintain and operate in accordance with the AUTECH's Installation Spill Contingency Plan (ISCP).

3.5.2.5 The Contractor shall maintain and operate in accordance with the AUTECH Pollution Prevention Plan. The plan minimizes the possibility of polluting the environment through: proactive reduction of the types and amounts of hazardous materials utilized; and the central control and inventory management of hazardous materials authorized for use.

3.5.2.6 The Contractor shall maintain and operate in accordance with AUTECH's Cultural and Natural Resources Plan.

3.5.2.7. The Contractor shall maintain AUTECH's Recordable Incident Rate data.

3.5.2.8. The Contractor shall report, and subsequently investigate, all Environmental and Safety mishaps, and shall prepare and submit an incident/complaint report to the Government for each event. The Contractor shall analyze the causative factors cited for such mishaps to determine what measures may be implemented to preclude future occurrences.

3.5.2.9. The Contractor shall conduct a Safety and Environmental review of all construction/repair projects to identify any potential hazards to personnel or the environment, prior to beginning work.

3.5.2.10. The Contractor shall maintain and operate in accordance with the Hazard Communications (HAZCOM) Program.

3.5.2.11 The Contractor shall ensure training, testing, and certification programs are in accordance with the Environmental and Safety Programs for all personnel. The Contractor shall maintain a record of such training received by each individual. Personnel who have not been trained shall not be permitted to conduct operations or handle hazardous material without supervision by trained and certified personnel.

3.5.3 WORKLOAD FACTORS:

3.5.2.1. Hazardous waste accumulation and storage facilities on Andros Island are:

- One Hazardous Waste Central Storage Facility (HWCSF) (equivalent to an EPA "90 Day Storage Facility")
- Typically, 15 hazardous waste accumulation points (equivalent to an EPA satellite accumulation area) see Table 1, Appendix 3.5.

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- One Hazardous Waste Storage Area (HWSA) for the accumulation of OTTO Fuel Waste.

3.5.2.2. Typical sampling:

- a. 30 potential waste streams per year
- b. 24 ground water monitoring wells per year
- c. 2 soil sample evolutions per year

3.5.2.3. Typically, one external Environmental and two external Safety (NAVOSH) audits (2 workweeks each) annually

3.5.2.4. Typically, 15 (2 workdays each) external Environmental and Safety data calls annually.

3.5.2.5. The Contractor shall perform quarterly inspections of the various hazardous waste accumulation and storage facilities

3.5.4 PERSONNEL:

Refer to Attachment #3, Personnel Qualification Sheets for required/recommended personnel.

3.5.5 GOVERNMENT FURNISHED PROPERTY:

None

3.5.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE:

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Effective Environmental Compliance Program	3.5.2	Environmental Quality Assessment (EQA) deficiencies remaining open at the end of the period must be < 3	Inspections by Government audit authority
Effective Safety Program	3.5.2	Naval Occupational Safety and Health (NAVOSH) and Naval Ordnance Safety & Security Activity (NOSSA) deficiencies remaining open at the end of the period < 2	Inspections by Government audit authority

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3.6 BASE SERVICES

Base Services encompasses all functions relating to Housing, Food, Fire, Security, Medical, Dependent Education and ARA/Retail. .

Management of housing assets at the AUTECH's Andros Island sites is provided for transient and permanent Government and Contractor personnel. All housing at AUTECH, Andros Island is Government owned. Not all assets are available for Contractor use. The Government sets aside housing for permanently assigned military and Government personnel. This housing is controlled by the base OIC. The OIC also has final authority over transient housing assignments.

Housekeeping provides all services typically associated with maid and laundry services.

Food service is provided at AUTECH's Andros Island sites. It is also provided to range vessels for extended underway operations. It is not provided at the West Palm Beach facility. The majority of the food is shipped to ASD once a week, via the Military Sealift Command (MSC) barge, from Port Canaveral, FL. Only critical, perishable food shipments are made on the AUTECH plane.

Fire Protection tasks range from dispatch, equipment operation, staff and equipment readiness to investigation and reporting. Aircraft Rescue Firefighting (ARFF) operations are for Navy and Range User Aircraft. Fire Prevention includes training, education, inspections, and emergency response planning. Emergency Medical Service provides rescue operations, patient treatment, transport, and reporting.

Overall, the AUTECH Security services are structured and operated so that all personnel, real property, facilities, equipment, and information must be protected against preventable injury, loss, damage, or compromise and to guard against covert acts of espionage, sabotage, trespass, and theft.

Mishaps or incidents are events that involve:

- accident/injury/death
- complaints or suspicion of criminal activity
- suspected compromise or loss of classified material
- other violations of established security regulations, fire, theft, material or property damage where action by a member of the security force is required or requested.

Routine medical care or treatment services will not be provided for visitors, transient personnel, or other individuals not permanently assigned to AUTECH's Andros Island facilities. The program also provides stabilization of trauma patients prior to evacuation to CONUS.

Classroom instruction is provided for kindergarten through eighth grade. The Government pays all expenses, including staffing costs, books, curriculum materials, etc., necessary to meet the minimum accreditation requirements of the Southern Association of Colleges and Schools (SACS).

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AUTEC Recreational Association (ARA) has been established to promote morale. ARA must fund itself with profits generated through the operation of its facilities.

3.6.1 APPLICABLE DOCUMENTS :

DoD DoD 5220.22-M; National Industrial Security Program Operating Manual (NISPOM) for Safeguarding Classified Information
DoD 5220.22-A; COMSEC Annex to the National Industrial Security Program Operating Manual
DoD 6055.6 DoD Fire and Emergency Services Program
DoD 6055.7-M; Fire Incident Reporting Manual
DoDINST 6055.7 (Series); Accident Investigations, Reporting and Record Keeping
DoDD 5220.6 (Series); Defense Industrial Personnel Security Clearance Review Program
SECNAVINST 6401.2 (Series); Licensure and Certification of Health Care Providers
OPNAVINST 5100.23 (Series); Navy Occupational Safety and Health (NAVOSH) Program
OPNAVINST C5510.101 (Series); Department of the Navy Security Manual for NATO, SEATO and CENTO Classified Information (U)
OPNAVINST 5513.1 (Series); Department of the Navy Security Classification Guidelines
OPNAVINST C5513.2 (Series); DON Security Classification Guidance for Air Warfare Programs (U)
OPNAVINST S5513.3 (Series); DON Security Classification Guidance for Surface Warfare Programs (U)
OPNAVINST S5513.5 (Series); DON Security Classification Guidance for Undersea Warfare Programs (U)
OPNAVINST S5513.7 (Series); DON Security Classification Guidance for Mine Warfare Programs (U)
OPNAVINST S5513.8 (Series); DON Security Classification Guidance for Electronic Warfare Programs (U)
OPNAVINST S5513.10 (Series); DoN Security Classification Guidance for Advanced Technology and Miscellaneous Programs
OPNAVINST S5513.12 (Series); DoN Security Classification Guidance for Intelligence Research Programs
OPNAVINST S5513.13 (Series); DoN Security Classification Guidance for Non-Acoustic Anti-Submarine Warfare Programs –
OPNAVINST S5513.15 (Series); DoN Security Classification Guidance for Naval Special Warfare Programs
OPNAVINST 5530.14 (Series); DON Physical Security and Loss Prevention
OPNAVINST 11103.1 (Series); Policies and Procedures Governing Bachelor Housing
OPNAVINST 11320.23 (Series); Shore Activities Fire Protection Program
NAVAIR 00-80R-14; Navy Aircraft Firefighting and Rescue Manual
NAVFAC P-1021; Navy Shore Establishment Fire Protection/Prevention Program
BUMEDINST 6710.7 (Series); Guidelines for Controlled Substances Inventory
NAVMEDCOMINST 6700.9 (Series); Ambulance Support
NAVSUP P-486, Food Service Management for General Messes
Standards Required for Accreditation of U.S. Type Schools in Latin America; Southern Association of Colleges and Schools (current version)

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3.6.2 REQUIREMENTS:

3.6.2.1 The Contractor shall manage both transient and Contractor-assigned quarters in a manner that ensures proper health, safety, and sanitary conditions and ensures protection and care of Government property. All transient rooms shall be designated as Nonsmoking.

3.6.2.2 The Contractor shall collect fees for use of transient quarters. The Contractor shall accept payment for such fees in the form of personal checks, credit cards, and cash, and issue an appropriate receipt. Fees collected shall be reported/credited to the Government.

3.6.2.3 The Contractor shall manage Contractor-assigned quarters in a manner that ensures proper health, safety, and sanitary conditions and ensures protection and care of Government property.

3.6.2.4 The Contractor shall collect rent for both Government and Contractor permanent housing at the rates established by the Government. Fees collected shall be reported/credited to the Government.

3.6.2.5 The Contractor shall provide laundry service and maintain laundry equipment

3.6.2.6 The Contractor shall provide separate laundry services for Andros-based and/or transient individuals on a not-to-interfere basis. The costs of such services are not reimbursable under this contract. Service, fees must be developed so customers pay the full cost.

3.6.2.7 The Contractor shall plan menus, ship, store, prepare and serve food, perform scullery operations, and clean messing/food storage spaces under proper sanitary conditions at all AUTECH Andros Island sites and on the large vessels. In addition the contractor shall provide a meal delivery service for ship's crews and operations center personnel who cannot use messing facilities due to testing commitments.

3.6.2.8 The Contractor shall procure the services of a qualified vendor to perform monthly independent inspections of AUTECH's food service facilities.

3.6.2.9 The Contractor shall assess and collect Government established meal fees from personnel using the AUTECH's messing facilities. Fees collected shall be reported/credited to the Government.

3.6.2.10 The Contractor shall provide crash, fire, medical, ARFF rescue, and services on the Andros base facilities, Site 2 and any of AUTECH's vessels. On-site standby aircraft crash/fire/rescue services shall be provided when requested by the Government at the Andros Town Airport.

3.6.2.11 The Contractor shall provide crash/fire as required/scheduled for Range User visiting helicopter operations at the Site 1 Heliport.

3.6.2.12 The Contractor shall maintain and operate in accordance with the AUTECH Fire Protection Program.

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3.6.2.13 The Contractor shall respond to fires outside the base perimeter if it is determined to be a threat to any AUTECH building, structure, or facility or if requested by local officials and approved by the Government.

3.6.2.14 The Contractor shall maintain all fire-related equipment in an operational and ready-for-use status.

3.6.2.15 The Contractor shall provide on-site, standby firefighting services during potentially hazardous evolutions, such as the fuel barge unloading or explosive/hazardous weapon handling.

3.6.2.16 The Contractor shall conduct a Fire Protection review of all construction/repair projects to identify any potential hazards to personnel or the environment, prior to beginning work.

3.6.2.17 The contractor shall provide maintenance and spill response services in accordance with AUTECH's Installation Spill Contingency Plan (ISLP). The Contractor shall respond to all hazardous substance spills

3.6.2.18 The Contractor shall maintain and operate in accordance with the AUTECH Security Program, which encompasses physical and industrial security at all AUTECH facilities.

3.6.2.19 The Contractor shall maintain and operate in accordance with a Physical Security Force Training Plan. Due to the nature of the responsibilities placed on the AUTECH security personnel, the contractor's plan shall provide operational autonomy for the security force.

3.6.2.20 The Contractor shall report, and subsequently investigate, all mishaps, and shall prepare and submit an incident/complaint report to the Government for each event.

3.6.2.21 The Contractor shall provide a uniformed, unarmed guard force for the physical security of AUTECH's West Palm Beach, FL, Headquarters and Site 1 on Andros Island. All guards, with the exception of those persons assigned to either the Main Gate or Dispatch positions, will have a Secret clearance. Physical security at AUTECH's downrange sites (2, 3, and 4) on Andros Island may be accomplished by properly trained on-site personnel.

3.6.2.22 The contractor shall have the ability to provide uniformed, qualified armed guard service within 24 hours of notification for a period of time not to exceed 90 days. This may be accomplished by arming the existing guard force or by replacing them with a qualified armed guard service.

3.6.2.23 The Contractor shall develop and maintain a physical fitness program for all guard force personnel assigned to duty under this contract. The program shall be sufficiently comprehensive to ensure employees maintain a level of physical fitness that allows them to continuously meet the physical requirements of their position.

3.6.2.24 Prior to employment or assignment to the Contractor's guard force, the Contractor shall verify that personnel meet all the personnel qualification stipulated in the PQS (Attachment 3 to this solicitation) as well as the minimum physical qualifications cited in Appendix 3.6.

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3.6.2.25 The Contractor shall provide security dispatch at Site 1 on Andros Island to receive emergency calls, monitor security alarms, and to dispatch/coordinate follow-up response via telephone, radio, or beeper. The Contractor shall maintain a record (Desk Journal) of all calls made/received, events, and actions taken as occur during each shift.

3.6.2.26 The Contractor shall provide pass and identification services to control access to AUTECH's facilities at both West Palm Beach, FL, Headquarters and at Site 1 on Andros Island.

3.6.2.27 The Contractor shall maintain and operate in accordance with the AUTECH Industrial Security Program.

3.6.2.28 The Contractor shall ensure that all Contractor employees requiring access to classified areas, equipment, material, documents, or information are processed for a National Agency Check (NAC) through the Defense Security Service (DSS).

3.6.2.29 The Contractor shall provide for delivery of classified documents and material between and within AUTECH's facilities and to Range Users, other U.S. Navy commands and to other Government or appropriate facilities.

3.6.2.30 The Contractor shall ensure that all newly hired employees receive adequate training concerning the safeguarding of classified information and material.

3.6.2.31 The Contractor shall provide routine medical care and treatment services during scheduled sick-call hours. In cases of medical emergency, the Contractor shall stabilize serious patients and arrange for medical evacuation to CONUS hospital. The Contractor shall provide medical staff personnel to accompany patients being evacuated to CONUS.

3.6.2.32 The Contractor shall provide for the timely analysis of medical samples.

3.6.2.33 The Contractor's Medical personnel shall be responsible for acquisition, delivery, storage, and control of medical inventory and medical waste.

3.6.2.34 The Contractor shall provide an accredited SACS dependent education program for AUTECH dependent children of Government and non-indigenous Contractor personnel on ASD grades K through 8.

3.6.2.35 The Contractor shall, at the end of each school year, submit a proposed budget for the following year to the School Board. Expenses above those necessary to meet minimum accreditation requirements must be defrayed by a pro-rata tuition fee approved by the AUTECH School Board. The Contractor shall collect the tuition fees from Contractor personnel. Reimbursement for costs associated with the education of dependent children of Government employees is handled separately by the Government.

3.6.2.36 The Contractor shall operate and ARA/retail activity for all AUTECH employees.

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3.6.2.37 The Contractor shall be responsible for the initial and subsequent purchase of inventory items for ARA retail activities. The Contractor, with the exception of fuel stocks, owns the inventory.

3.6.2.38 The Contractor shall develop an annual budget for the ARA, based upon projected revenues and expenses. The Contractor shall ensure that ARA is a self-sufficient operation by using the profits derived from ARA products, services, and activities to maintain and operate the ARA program. A copy of this budget will be provided to the Government. The Contractor shall provide to the Government a monthly ARA accounting report on gross sales and expense information.

3.6.3 WORKLOAD FACTORS

3.6.3.1 Representative lists of typical assets and inventories can be found in Appendix 3.6. In all cases actual inventories are those as supplied/approved by the Government.

3.6.3.2 A total of 225 transient quarters units.

3.6.3.3 An average daily loading of 120 transient personnel may be expected with daily peaks of up to 200 several times a year.

3.6.3.4 A total of 45 housing units are available for unaccompanied Government personnel.

3.6.3.5 A total of 355 housing units are available for unaccompanied Contractor personnel.

3.6.3.6 A total of 62 "family trailers" are available for accompanied Government and Contractor personnel.

3.6.3.7 Maid service shall be provided every day for occupied transient rooms. Weekends and holidays maid service is provision of clean towels and linen as necessary.

3.6.3.8 Transient quarters operations shall be manned for check-in/check-out purposes 365 days per year during established work hours and as required for off-duty hour arrivals. At least one person shall be on call during off-duty hours to assist residents (within 30 minutes).

3.6.3.9 Changes of uniforms shall be provided daily for food service personnel.

3.6.3.10 Unaccompanied permanent party personnel shall receive clean bed linens weekly.

3.6.3.11 For transient quarters, clean towels shall be provided daily and clean bed linens shall be provided weekly or upon a change of occupancy.

3.6.3.12 An estimated average of 10,000 articles (towels, sheets, etc.) including 400 work uniforms are laundered each month.

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3.6.3.13 Food shall be prepared in sufficient quantity to meet the needs of transient and permanently assigned personnel normally attending each meal at AUTECH's Andros Island facilities. Estimated number of meals served monthly is:

Meal	Average	Peak
Breakfast	6,000	7,200
Lunch	15,000	18,000
Dinner	13,500	16,200

3.6.3.14 Meals will be prepared and served daily at AUTECH's downrange sites. Operating hours of these messing facilities is flexible.

3.6.3.15 Aircraft crash/rescue services shall be provided at AUTECH, Andros Island 24 hours, 7 day per week, 52 weeks per year. On-duty manning shall meet the requirements of a Category 2 airfield, IAW NAVAIR 00-80-R-14.

3.6.3.16 The following security posts shall be manned 24 hours per day, 7 day per week, 52 weeks per year

1. West Palm Beach, Fl, Headquarters: Front Desk and Roving Patrol
2. Andros Island Site 1 Main Gate
3. Andros Island Site 1 Front Desk, Command Control Building
4. Andros Island Site 1 Entrance Gate, Range Support Shop Compound
5. Andros Island Site 1 Security/Fire/EMS Dispatcher
6. Andros Island Site 1 Roving patrol

3.6.3.17 Typically, two contract personnel are required at the Site 1 Main Gate to execute vehicular/personnel inspection procedures.

3.6.3.18 Courier service for classified documents/material being transferred between West Palm Beach and Andros Island is required daily

3.6.3.19 One doctor and one nurse shall be on-call, and immediately available, 24 hours per day, 7 day per week, 52 weeks per year, to provide emergency medical care, at Site 1 on Andros Island.

3.6.3.20 As a minimum, the dispensary shall be staffed, and sick-call held, during the hours of 0800 to 1000 and 1300 to 1400, Monday through Friday, holidays excepted.

3.6.3.21 Estimated medical warehouse issues per month: 125

3.6.3.22 The AUTECH school has a capacity of approximately 100 children; however, the population varies considerably from year to year.

3.6.3.23 The school shall operate for the number of days each year as required by the accreditation authority cited.

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3.6.3.24 The retail store carries approximately 5,500 general merchandise items, 3,500 grocery items and 175 liquor items.

3.6.3.25 Typical operating hours offered by the retail facilities at Site 1 on Andros Island are:

- **Food and Beverage Service:**

Lighthouse Café	Mon-Sun	0800-2230
	Sat only	0800-1030
Beach House	Thurs-Tues	1100-1900
	Wed	1100-2230
TOTO Pub	Mon-Thurs	1700-2400
	Fri	1700-0100
	Sat-Sun	Closed
Thousand Fathoms Club	Mon-Thurs	1700-0100
	Fri-Sat	1700-0200
	Sun	1200-2400

- Retail Store: Mon-Sat 0800-1900
Sun/Holidays 1300-1700

- Barber/Beauty Shop: Mon-Fri 0900-1900
Sat 0800-1800
Sun/Holidays Closed

- Retail Fuel Sales:
 - Base Service Station Mon-Fri 0715-1600
Sat: 0700-1200
Sun: Closed
 - Harrison Wharf As Determined by ARA

3.6.4 PERSONNEL:

Refer to Attachment #3, Personnel Qualification Sheets for required/recommended personnel.

3.6.5 GOVERNMENT FURNISHED PROPERTY

Refer to Appendix 3.6

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3.6.6 PERFORMANCE REQUIREMENTS SUMMARY TABLE:

Performance Objective	SOW Paragraph	Performance Expectation	Method of Assessment
Quality management of housing assets	3.6.2.	95% satisfactory responses on customer surveys	Solicited response survey on various aspects of housing performance
Effective Industrial Hygiene Program	3.6.2.	No deficiencies/findings open or uncorrected over 30 days	Monthly inspection done by certified State of Florida sanitation inspector
Effective base wide fire protection with emphasis on fire prevention	3.6.2.	No significant injury to / loss of personnel, facilities, or equipment due to a preventable cause.	Random inspections and surveys against Contractor responsibilities checklist or outside audit authority
Effective security and education program	3.6.2.	No deficiencies/findings uncorrected over 30 days.	Random inspections and surveys against Contractor responsibilities checklist or outside audit authority.

ATTACHMENT #4

GOVERNMENT ESTIMATED LEVELS OF EFFORT (LOE)

LOE estimates are provided as Full Time Equivalent (FTE) positions based on 1,880 productive work hours per year per FTE. Figures reflect the Government's independent assessment of the level of effort per SOW chapter. The FTE count does not take into consideration the use of overtime, cross utilization of personnel or different approaches a company may take (including subcontracting) in accomplishing the work required. FTE's shown are not intended to be used as a minimum or maximum staffing level. The FTE's are provided to assist offerors in understanding the Government's perception of the general amount of work required to be performed and should not be used as a surrogate for the offeror's own LOE assessment. Most non-indigenous positions require a Government security clearance at the secret level.

SOW Chapter	Estimated FTE	Comments
1.1	N/A	Ch. 1.1 staffing is organization-dependent
1.2	18	No indigenous personnel are employed in this area.
1.3	33	Estimate is based on a labor force of 18 in WPB and 15 on Andros.
2.1	31	No indigenous personnel are employed in this area.
2.2	23	No indigenous personnel are employed in this area.
2.3	50	No indigenous personnel are employed in this area.
2.3A	7	Estimate is based on 1-HITS Engineer; 1- Radar Lead; 5- Radar Technicians. No indigenous personnel are employed in this area.
2.4	20	No indigenous personnel are employed in this area.
2.5	15	No indigenous personnel are employed in this area.
2.6	4	No indigenous personnel are employed in this area.
2.7	11	No indigenous personnel are employed in this area.
2.8	5	No indigenous personnel are employed in this area.
2.9	5	No indigenous personnel are employed in this area.
2.10	10	No indigenous personnel are employed in this area.
3.1	130	A significant portion of the effort in this area is performed by indigenous personnel.
3.2	50	A minor portion of the effort in this area is performed by indigenous personnel.
3.3	61	A minor portion of the effort in this area is performed by indigenous personnel.
3.4	49	A significant portion of the effort in this area is performed by indigenous personnel.
3.5	4	A minor portion of the effort in this area is performed by indigenous personnel.
3.6	161	Estimate includes 25 FTE, Fire Department; 40 FTE, Security. A significant portion of the effort in this area is performed by indigenous personnel.

L34X TECHNICAL PROPOSAL - COMPLEX ITEM (AUG 2001)

Organization. The technical proposal shall include information and documentation in sufficient detail to clearly identify the offer's overall qualifications, divided in the following sections, in the order listed.

- ◆ Management
- ◆ Technical Approach
- ◆ Personnel
- ◆ Past Performance

I. Management Approach: This sub-factor addresses your comprehensive management approach to accomplish the Government's objectives and requirements identified in the Statement of Objectives (SOO) and Performance Work Statement (PWS). Specifically, address the rationale for your approach and any aspect(s) of your approach that you believe enhances overall management efficiency and effectiveness including cost control features.

(A) Describe your proposed organization sufficiently to enable the evaluators to understand the structure, staffing, and key aspects of your management methodology. Your proposed organization structure and staffing levels should demonstrate your understanding of the requirements of the Performance Work Statement, the challenges set forth by the Statement of Objectives, and your commitment to deliver on your improvement initiatives. It should comply with sound organizational management principles, permit effective interfaces with other organizations, and demonstrate cost control features whenever practicable. Describe your methodology to recruit, retain, and train personnel. (Note that transition /phase-in recruiting should be addressed in paragraph (F) below and not in this section). The proposed staffing must be consistent with the staffing addressed in the Cost volume.

(1). Briefly and precisely describe your proposed organization explaining its relationship to the rest of your company and any joint venture partners and how it will interface with subcontractors and the Government. Emphasize features of your proposed organization that will result in enhanced performance or reduced cost. Discuss your policy on delegation of authority and explain how you will provide flexibility to meet changing workloads (both increased and decreased workloads) and quick-response requirements. Be specific regarding how you will use regular, temporary, subcontract, corporate, etc, employees; or other sources and any implications resulting from various response scenarios. Also address your use of overtime.

(2). Provide your proposed organizational chart including major subcontractors. Include an organizational chart(s) showing the staffing level assigned to each unit. Give a general description only of the skills mix in each unit. A detailed breakout of specific skills is not required in this volume. Identify the Performance Work Statement functions to be performed by each unit. Detail should be sufficient to allow the

Government to evaluate the suitability of the organization to perform the work required by the Performance Work Statement. Your use of innovative structures, which promote productivity, efficiency, effectiveness, and cost control, is encouraged. If your organizational structure will change over time, give a general description of the changes. Detailed organizational charts reflecting the changes are not required.

NOTE: Nothing in these instructions or the Performance Work Statement is intended to dictate your organizational structure.

(B) Describe your approach for managing subcontracted efforts.

(C) Describe your draft plan for evaluating your monthly performance in meeting the expectations in the performance requirements summary table at the end of each chapter of the SOW. Specifically identify the key performance data you will collect, how you will collect, analyze, and utilize it in your self-assessment. Your proposed performance measures will be used during source selection to help the Government evaluate your understanding of the requirements. The Government will provide comments, which may require plan elements be modified, prior to award. A final self-assessment plan, incorporating these Government comments, will be due not later than thirty days after contract award.

(D) The Government is committed to maintaining an excellent relationship with its host country, The Commonwealth of the Bahamas, at every level of interaction. To assist in meeting that objective -

(1) Describe your approach to management of the indigenous workforce.

(2) Describe your approach, within all applicable laws, regulations, and customs, to developing and maintaining effective ties to the Bahamian community.

(E) Innovations and Efficiencies : Address your initiatives to significantly reduce and aggressively control the cost of AUTECH test and support operations /services and to achieve other qualitative improvements while maintaining technical excellence within manageable levels of risk. Initiatives are not confined to a particular area and may address any aspect of the AUTECH operation. It is permissible to introduce initiatives described in this area in other section discussions. A general description and discussion of benefits will be appropriate with the more detailed description and assessment reserved for this part of your proposal. Additionally, initiatives described in this area will not be eligible for consideration under the Value Engineering clause.:

(1) Clearly and succinctly describe the improvement initiatives you propose to take during the contract that will result in cost savings or qualitative improvements (e.g., enhanced customer-focus; heightened work performance accuracy, thoroughness, timeliness, reliability; increased customer value). Be very specific about the nature, level and

timing of expected results. Initiatives must be accompanied by sound risk reduction and include substantiation of the proposed approach(s). The substantiation may be based on relevant past experience implementing the same or similar initiatives being proposed or an analysis with sufficient detail to assess the credibility of the proposed approach(s). Suggestions to arbitrarily eliminate or reduce test or technical capabilities (e.g. close test facilities or reduce test operating envelopes) are not considered improvement initiatives and will not be evaluated. Initiatives requiring a lengthy approval process to determine acceptability may also not be evaluated. Initiative descriptions must include the following:

- (a). A baseline, justification, and trade-off analysis.
- (b). A profile of expected savings/benefits expressed in terms of labor full time equivalents (FTEs), labor dollars, material dollars, and utility dollars. (Note: an FTE is computed as the total direct and overtime labor hours divided by the number of labor hours in your direct work-year). Describe the qualitative benefits as well as the cost benefits (if applicable) for all initiatives.
- (c). Investment requirements and a return on investment analysis (state whether investment cost as well as savings are reflected in your cost proposal).
- (d). An implementation plan with time-phased schedule. Include a thorough assessment of applicable/enabling laws and directives and discussion of required waivers/approvals.
- (e). A discussion of the concept, benefits, implementation process, and enabling mechanisms if your initiatives involve cost and/or resource sharing, property transfers, or leases, etc. (Identify any liabilities created for the Government.)
- (f). Probability of accomplishment and risk assessment.
- (g). A composite summary and timeline of initiative results.
- (h). The process you would use to measure, validate, and document results. Include a discussion and description of applicable performance measures and performance goals. Describe how you will integrate your process and align these measures to those described in Section 1(d).

(F) Transition/Phase-In : Address your approach to transition /phase-in resources and personnel onto this contract and to ensure full continuity of test and mission support on 1 April 2005.

(1) Describe your plans for assuming responsibility for the work on 1 April 2005. Discuss the phase-in period of 1 January 2005 through 31 March 2005. Show key milestones and explain how you will use the phase-in period to mobilize, train, and otherwise prepare to assume full operational responsibility on 1 April 2005. Describe your plans to integrate and transfer the tasks (workload) from the predecessor contractor. Description should include the identification of risks and risk abatement plans to minimize disruption during the transition period and maintain schedule and costs. Include at least the following information:

- (a). The person responsible for phase-in. Include resume if not already provided in Key Personnel.
- (b). Phase-in team organizational chart with brief functional statement and staffing for each unit.
- (c). Recruiting plan. Specifically address your plans for hiring a work force (US and Bahamian) and contingency plans in case you cannot hire all the required skills.
- (d). Discuss your plans for interfacing with the incumbent contractor during phase-in.
- (e). Discuss your plans for assuming accountability for Government-furnished property (GFP).

II Technical Approach: This sub-factor addresses your comprehensive technical approach to accomplish the Government's objectives and requirements identified in the Statement of Objectives (SOO) and Performance Work Statement (PWS). Specifically, address the rationale for your approach and any aspect(s) of your approach that you believe enhances overall management efficiency and effectiveness including cost control features.

(A) Maintenance and Operations Function:

- (1) Describe how you will ensure that AUTECH's testing and support infrastructure will be available when needed and operate safely and reliably while adhering to security and environmental constraints. Specifically address aspects of your approach that you believe enhance the efficiency and effectiveness of your infrastructure management process.
- (2) Explain your maintenance approach to ensure requirements are met and maintenance funding and time are optimized. Explain your understanding and response to operating AUTECH test systems under less

than ideal conditions (e.g., difficult environmental conditions or high density of platforms to be tracked).

(3) Describe the scheduling/coordination process you would use to coordinate the requirements of operations, maintenance, and investment efforts and ensure potential conflicts are resolved in advance. Specifically, explain how you will accommodate the dynamics of fluctuating test requirements and/or high tempo full capacity testing while providing time to perform infrastructure maintenance and investment efforts. Describe your approach to scheduling the range test assets, range test personnel, and supporting services to successfully meet AUTECH Customer requirements. Demonstrate your understanding of the scheduling process in light of a highly variable test workload, and with the goal of cost effectively utilizing resources while ensuring AUTECH Customer satisfaction.

(B) Address your approach to test planning and the subsequent conduct of these tests. Discuss your method for developing test plans and Operational Directives and for executing the plan to successfully meet the Customer's objectives.

(C) Describe your approach to handle, flush, and/or make Ready-for-Issue (RFI) the REXTORPs, EXTORPs, EMATTs and MK-30 targets. Explain your understanding of the safety and environmental aspects of working with these vehicles, as well as with the ordnance systems that AUTECH handles/stores.

(D) Describe your M&O approach to acoustic tracking equipment (ATE; pingers) for successful in-water tracking of weapons, targets, ships/subs, and other UW track platforms to be tracked on range. Explain your understanding of the pinger recertification cycle, Government (NAVSEA) ATE program, and failure analysis procedures that work to ensure 100% on-range tracking success.

(E) Address your approach to providing information technology and associated systems. AUTECH is looking to critically examine all information technology processes, practices, and procedures and develop a synergistic approach to meeting information technology requirements. Our objective is to leverage information technology strategies that increase efficiency and cost effectiveness throughout AUTECH.

(1) Describe your approach to maintaining an information technology infrastructure able to cope with a rapidly changing technology environment.

(2) Describe your capability and approach to managing complex industrial computing networks, and provide evidence of understanding of the unique requirements involved in managing AUTECH's networks.

(3) It is the Government's intention to allow transfer of existing software licenses for Gold, PeopleSoft, Cognos Powerhouse, and other associated support software to the successful offeror should the offeror wish to initiate such a transfer and obtain approval from the software vendor. Offerors must include all costs associated with such transfers as part of their proposal. Additionally, the offeror may propose using the existing Government-owned MIS servers (hardware and operating systems), as described in PWS, as GFP, or at their discretion, propose MIS servers as contractor-furnished property (CFP). In any case, thoroughly address the following:

(a) Explain where the systems will be hosted. Explain connectivity, protection of data and systems as specified in PWS, and how you are going to assure availability of the data. If hosted at AUTECH, describe your approach to ownership and maintenance of computer hardware required to host the systems.

(b) If any requirements of PWS are to be met by using new systems you will furnish, thoroughly address the following:

(i) Provide evidence of the systems' ability to satisfy AUTECH requirements and its successful use in other implementations.

(ii) Provide a transition approach, explaining if and/or how data and requirements will be migrated from current systems and whether the current systems will be maintained or shut down. Provide a transition timeline defining key activities and events.

(4). Explain how AUTECH data and requirements will be transitioned at the end of the contract to ensure continuity of operations.

III Personnel:

(1) Demonstrate that the offeror is capable of performing all aspects of the Statement of Work by providing a matrix that correlates personnel assignment to each task of the Statement of Work. Show that your team possesses education and skills well suited to perform the Statement of Work.

(2) Describe your approach for providing key personnel over the life of the contract. Specifically describe your approach for managing key personnel attrition and response to new requirements.

(3) Describe your approach to staffing non-key personnel positions including any programs to maintain or develop your workforce including upward mobility, tuition assistance, and internships. The existing contract

between the Naval Undersea Warfare Center and the University of Rhode Island, Kingston R.I., for student services (N66604-01-D-0005) is offered as one example of a successful internship program.

(4) Remove the Personnel Data Form (Attachment # 9) from the solicitation and supply the required information as explained below for each individual proposed as Key Personnel. Facsimiles and continuation sheets are permitted, and should follow the general format of the PDF. Place the PDFs behind the appropriate PQS in the proposal.

(a) Under "experience element", identify those areas of experience considered pertinent to the work required under the proposed acquisition.

(b) Under "time period", indicate the period of time during which experience for the respective experience category was gained. Time periods may be concurrent for several elements.

(c) Under "occasion", indicate job title, employer (contractor name or Government activity) and the capacity in which the person worked to obtain the experience in that element.

(d) Under "narrative", briefly describe or amplify total experience or other pertinent qualifications that specifically relate to this procurement. Also, identify the employees' depth of knowledge gained as a result of work experience; (i.e., a primary or collateral requirement of the job). Also indicate whether the employee is currently functioning as a key person under other contracts and describe their involvement under those contracts. (You should also include a resume on any other person whom you regard as a key/critical element in your proposal, regardless of their organizational placement.)

(5) The offeror shall provide at least the number of key personnel specified below in each of the positions listed.

Key Personnel

<u>Labor Category</u>	<u>SOW</u>	<u>Number</u>
Manager, Program/Project III – AUTECH PM	1.1	1
Manager, Program/Project II – Test Operations Manager	2.0	1
Manager, Program/Project II – Base Operations Manager	3.0	1
Engineer, Systems II – MK 30 Target Program Engineer-In-Charge	2.4	1
Engineer, Electrical/Electronics II – In Water Systems Engineer	2.2	1
Engineer, Acoustical I – Sr. Acoustic Testing Engineer	2.2	1
Analyst I – Sr. Data Analyst	2.2	1
Analyst I – Sr. Systems Analyst	2.2	1
Engineer, Electrical/Electronics II - Communications	2.3	1

Note: Substitution of Key Personnel is subject to the "Key Personnel Requirements" clause in Section H.

(6) Include resumes only for persons who will be available and assigned to this contract. Include a signed letter of intent for all key personnel (specifying compensation and willingness to relocate) or an explanation why a signed letter cannot be provided at this time. You are not required to obtain signed letters of intent from current AUTECH incumbent employees that may be offered in your proposal. If you propose a position for which you have not identified a specific employee, state the qualifications for the position and the recruitment approach you will use to fill it.

(7) Provide a certification signed by a responsible officer of the corporation that all Non-Key personnel meet the requirements shown in the specification. Non-Key personnel qualifications need not be documented in the proposal, but data may be required during negotiations or performance if Non-Key personnel qualifications are questioned.

(8) All personnel must have appropriate security clearances, as specified on DD Form 254 and PQS.

(9) Identify the designated Project Manager (PM). Include a Personnel Data Form (PDF) for the PM (if the PM's PDF is included elsewhere in the proposal, identify its location, do not resubmit). Address the PM's authority, ability to independently commit company resources to performance under the contract, and the PM's line of communication to senior company management. Describe the PM's previous experience managing similar efforts. (The contract requires the PM to be a Key Person, directly charging to the contract.)

(10) Identify any proposed relocation of personnel.

IV. Past Performance. In a separate attachment, provide information relative to past performance.

(A). Provide a list of all (maximum of 10) service contracts and subcontracts with a value exceeding \$1,000,000 that are currently in process or have been completed during the past three years. If the maximum is exceeded, list the 10 most current actions. Contracts listed shall include those with Federal, state, or local governments, as well as with commercial customers. Offerors that are newly formed entities without prior contracts should list contracts and subcontracts as required above for all key personnel. Include the following information for each contract and subcontract:

(1) Contract Title

(2) Date of Award

- (3) Name of contracting activity or commercial firm
- (4) Contract number
- (5) Contract type
- (6) Total contract value
- (7) Brief narrative (less than 20 lines) describing your involvement in the effort, complexity, objectives achieved, and types of personnel who performed under the contract. List ships or military systems involved, if any. List major subcontractors.
- (8) Procuring Contracting Officer* and telephone
- (9) Administrative Contracting Officer*, if different, and telephone
- (10) Government Program Manager* or COR, and telephone

[*Or non-Government official with similar duties or rank.]

(B). Describe any quality awards or certifications that indicate the offeror possesses a high quality process for developing and producing the product or service required (e.g., the Malcolm Baldrige Quality Award). Identify what segment of the company (one division or the entire company) received the award or certification and when it was received. If the award or certification is over three years old, present evidence that the qualifications still apply.

(C). Provide similar past performance data for major subcontractors (those performing more than 25% of the effort).

(D). Submit the Past Performance Volume 30 calendar days after RFP issuance to the Contracting Officer at the address specified in paragraph TBD.

(E). Provide consent letters executed by each joint venture partner and/or subcontractor, authorizing release of adverse past performance information so the offeror can respond to such information.

(F). Provide client authorization letters for each identified effort for a commercial customer authorizing release to the Government of requested information regarding the offeror's performance.

L40 COST PROPOSAL (JAN 2001)

(a) Content of Cost Proposal (Volume II). Offerors shall submit with their cost proposal a completed Cost Summary Sheet, Attachment #10. The offeror should trace cost data from the supporting data and calculations to the Cost Summary Sheet. The offeror shall supply the most currently available rates for direct labor, overhead, general and administrative expense, and any other factors used in developing the proposal. The offeror shall submit any information reasonably required to explain the estimating process, including:

- (1) The judgmental factors applied and the mathematical or other methods used in the estimate;
- (2) Any contingencies used by the offeror in the cost proposal; and
- (3) A copy and/or pertinent excerpts of the offeror's personnel policies pertaining to compensation plan(s) for professional employees including performance appraisal and salary administration procedures, salary grades and ranges, summary of basic benefit programs and relocation policies (See 52.222-46, Evaluation of Compensation for Professional Employees).

Note: In determining a cost realism position for each offeror the Government will use any and all available information.

(b) Labor Costs. Provide full justification for all proposed direct labor rates (unburdened). If key personnel proposed are the offerors in-house employees provide their current hourly wage rate and identify the date as of which the wage rate is current. If key personnel proposed are not currently employed by your company, submit signed letters of intent showing the wage rate the person agrees to work for your company upon employment. You are not required to obtain signed letters of intent from current AUTECH incumbent employees that may be offered in your proposal, however you must demonstrate why the proposed hourly rates for those personnel are realistic. If proposed direct labor rates vary from actual wages of key personnel, explain the basis for those rates. Trace proposed direct labor rates to proposed individual personnel.

- (1) Traceability is required for the Government to determine the cost realism of the offeror's direct labor costs. Normally the Government determines realistic direct labor costs using actual individual wages for key personnel (unless the offeror invoices category averages) and category average rates for non-key personnel.
- (2) The Service Contract Act (SCA) does not apply to this procurement.
- (3) To assist the Government in its cost realism analysis, an independent firm was commissioned to determine reasonable and realistic minimum wage rates by occupational category at AUTECH. This study was limited only to those positions based at Andros Island, Commonwealth of the Bahamas and applies only to non-indigenous personnel. Data from this study is provided as Attachment 11 to this solicitation. The Attachment provides minimum wage rates the Government considers being reasonable and realistic compensation in the labor categories cited. The Government, in its cost realism analysis, will utilize this data.

Proposals should clearly demonstrate the linkage between the pay rates and labor categories for Andros Island presented in Attachment #11 and those proposed in your offer. Any labor category you propose which is not listed in the pay study must be classified by the offeror to provide a reasonable relationship (i.e., appropriate level of skill comparison) between the unlisted category and the category listed in Attachment 11.

Proposals offering pay rates less than those provided in Attachment 11 must explain how required staffing levels will be achieved utilizing the lower pay rates. Proposals not providing adequate justification will be evaluated for risk, in accordance with the provisions of Clause M32.

(3) Offerors must support any proposed escalation factor with convincing rationale: factual data (including actual direct labor rates for at least three years) and complete supporting data and rationale for out-year escalation projections. In the absence of convincing rationale, the Government will use the current Data Resources Inc. (DRI) recommendation for Professional and Technical Workers in evaluating the offer.

(4) Section L identifies "Required Capital Assets and Inventory Acquisitions". The acquisition or depreciation costs provided must be accounted for in your cost proposal.

(c) Indirect Costs.

(1) Offerors shall provide data on all indirect rates proposed including beginning and end date of the period covered by the rate and composite rate calculations, if any. Identify clearly the bases to which the rates are applied.

(d) Material.

(1) Offerors will use the following estimates (plus applicable indirect costs) for material and travel costs. These are total cost estimates for the entire contract. For further definition of costs, see the Statement of Work and the clause in Section H entitled "Travel Costs and Responsibilities". Offerors are required to distribute these sums among subcontractors consistent with their technical proposal. Whenever a subcontractor proposes material costs, the subcontractor must fully burden such costs and these costs must be added to the material estimate. Subcontractor proposals shall include a complete listing of all costs other than labor which are charged direct by their company exclusive of travel costs and purchased material which is incorporated into a deliverable item.

(2) Offerors shall include a Material estimate (in thousands) as follows:

<u>BASIC</u>	<u>OPTION</u>
Contract Year 1 (4-1-05/3-31-06) – \$14,178	\$14,567
Contract Year 2 (4-1-06/3-31-07) –\$14,461	\$14,858
Contract Year 3 (4-1-07/3-31-08) –\$14,751	\$15,156

Contract Year 4 (4-1-08/3-31-09) –\$15046	\$15,459
Contract Year 5 (4-1-09/3-31-10) –\$15,346	\$15,768
Contract Year 6 (4-1-10/3-31-11) –\$15,653	\$16,083
Contract Year 7 (4-1-11/3-31-12) –\$15,996	\$16,405
Contract Year 8 (4-1-12/3-31-13) –\$16,286	\$16,733
Contract Year 9 (4-1-13/3-31-15) –\$16,611	\$17,068
Contract Year 10 (4-1-14/3-31-15) –\$16,944	\$17,409
Contract Year 11 (4-1-15/3-31-16) –\$17,286	\$17,757
Contract Year 12 (4-1-16/3-31-17) –\$17,628	\$18,112
Contract Year 13 (4-1-17/3-31-18) –\$17,981	\$18,474
Contract Year 14 (4-1-18/3-31-19) –\$18,340	\$18,844
Contract Year 15 (4-1-19/3-31-20) –\$18,707	\$19,221

(3) Offerors shall include the following Government furnished travel estimate (in thousands), which includes travel and subsistence for work at alternative work sites under the contract and for allowable local travel per the JTR, as follows:

Contract Year 1 (4-1-05/3-31-06) –\$686
Contract Year 2 (4-1-06/3-31-07) –\$700
Contract Year 3 (4-1-07/3-31-08) –\$714
Contract Year 4 (4-1-08/3-31-09) –\$728
Contract Year 5 (4-1-09/3-31-10) –\$743
Contract Year 6 (4-1-10/3-31-11) –\$758
Contract Year 7 (4-1-11/3-31-12) –\$773
Contract Year 8 (4-1-12/3-31-13) –\$788
Contract Year 9 (4-1-13/3-31-15) –\$804
Contract Year 10 (4-1-14/3-31-15) –\$820
Contract Year 11 (4-1-15/3-31-16) –\$836
Contract Year 12 (4-1-16/3-31-17) –\$853
Contract Year 13 (4-1-17/3-31-18) –\$870
Contract Year 14 (4-1-18/3-31-19) –\$888
Contract Year 15 (4-1-19/3-31-20) –\$906

Note: Travel costs for the option are the same as the basic.

(4) The Government's Cost Realism evaluation of these costs may alter the additional costs on the basis of more accurate rate data or a Government Analysis and Estimate

of the appropriate added costs. Any such alteration in the evaluated contract pricing will not, however, be reflected in the contract award.

(5) Any offeror having an accounting system, which includes, within overhead or G & A, the cost elements of material and travel/subsistence shall specifically state this fact in the cost proposal. This will preclude these costs from being unduly considered in the Government's cost evaluation.

(6) Subcontracts regardless of dollar value shall be adequately documented to facilitate a determination of cost reasonableness using a Cost Summary Sheet. All requirements for the prime contract cost proposal shall be met by the subcontractor as well. Note that compensation for labor paid to any individual who is not a bona fide employee of the offeror is a subcontract.

M32X EVALUATION FOR AWARD - BEST VALUE

(a) Award will be made to the responsible offeror whose proposal contains the combination of those criteria offering the best overall value to the Government. This will be determined by comparing the difference in value of technical (non-cost) features of proposals with the difference in the cost to the Government. Offers will be evaluated on two evaluation factors, **TECHNICAL CAPABILITY** and **COST**.

(1) Technical Capability Subfactors

- (i) Management Approach**
- (ii) Technical Approach**
- (iii) Personnel**
- (iv) Past Performance**

(2) The Technical Capability Subfactors listed above are equal in importance. A proposal risk assessment will be conducted with the offeror's proposed approach as related to accomplishing the requirements of the solicitation. This technical proposal risk assessment will be given consideration commensurate with the result of the technical evaluation.

(b) Technical Capability is significantly more important than Cost. Although Cost is the least important evaluation factor, it is important and will be seriously considered. The degree of its importance will increase with the degree of equality of the proposals in relation to Technical Capability, or when it is so significantly high as to diminish the value of the technical superiority to the Government.

(c) Technical Capability. The Government will evaluate proposals to assess each offeror's ability to accomplish the technical requirements described herein. Offers will be rated in each of the following subfactors:

(1) MANAGEMENT APPROACH

The proposal demonstrates an effective management approach for accomplishment of the Government's objectives and requirements identified in the Statement of Objectives (SOO) and Performance Work Statement (PWS). Specifically, your approach and any aspect(s) of your approach that enhances overall efficiency and effectiveness, including cost control features are of interest.

The offeror proposes an organizational structure and staffing concept that demonstrates an effective approach to organize, staff, lead, plan, coordinate, and control resources to meet the requirements of the performance work statement for successful contract execution. The organizational structure includes effective lines of communication and interface between management/supervisory and technical staffs, Government personnel, and other support contractors and customers. The offeror demonstrates a competitive methodology to effectively attract, retain and motivate a highly qualified workforce, and

provides an effective management plan to accommodate shortfalls. Innovative organization concepts and cross-utilization techniques provide for an agile, responsive and efficient workforce. The offeror proposes a proactive approach to accommodate workload fluctuations. The approach addresses accommodation of short-term requirements for unique skills and capabilities (surge), and demonstrates flexibility and efficiency in reacting to new situations requiring the timely reallocation or reduction of resources.

The offeror proposes a sound performance measurement approach, performance measures, and performance goals that ensure delivery of proposed results, support management and decision-making, facilitate communications, and motivate high performance. The proposed performance measures reflect high performance goals.

The proposal identifies innovation and efficiency initiatives to be initiated during the life of the contract that would reasonably result in significant cost savings or qualitative improvements. Proposal initiatives are well defined and include justifications, trade-offs, investment requirements, expected returns, risk assessments, and implementation plans. Implementation plans thoroughly address applicable laws and directives and outline any required waivers/approvals. The offeror proposes a sound process to measure, validate, and document initiative results.

The proposal demonstrates the offeror's ability to effectively and efficiently manage proposed subcontractors. The offeror proposes a sound plan to address to provide a unified contractor work force.

The proposal demonstrates the offeror's understanding of the challenges in recruiting, training and retaining an indigenous workforce. The proposal identifies effective methods for maintaining effective ties with the host country

The proposal demonstrates the offeror's ability to effectively and efficiently transition/phase-in resources and personnel onto this contract and ensures full continuity of test and mission support on the required performance start date of the contract. The offeror proposes a sound plan to address the needs of the work force and innovation and efficiency initiatives are implemented.

(2) TECHNICAL APPROACH

Technical approach will be evaluated for its ability to accomplish the Government's objectives and requirements identified in the SOO and PWS. The offeror's proposed approach demonstrate the offeror's understanding and ability to optimize the operations and maintenance of complex technical systems as well as the ability to provide mission support and associated services required for the overall AUTECH mission. This includes the ability to recognize and address safety, security, and environmental issues. Results and outcomes of the offeror's proposed approach include high asset reliability, availability, maintainability, and configuration management; sound cost control features; and responsive and effective mission support services.

Specifically, your approach and any aspect(s) of your approach that enhances overall efficiency and effectiveness, including cost control features are of interest as well as the following specific topics:

(a) Maintenance and Operations Function

- (i) testing and infrastructure support
- (ii) maintenance approach
- (iii) scheduling and coordination process
- (iv) test planning and conduct
- (v) target management
- (vi) acoustic tracking equipment management approach

(b) Information Technology (IT)

The proposal demonstrates the offeror's capability to apply IT strategies that increase efficiency and cost effectiveness throughout AUTECH, integrate and streamline information flow, enable reliable operations, and provide quality test and evaluation data.

The offeror proposes an efficient and effective approach to optimizing information technology management and operations. The proposal demonstrates how the offeror will provide systems and processes that integrate and streamline information, enable reliable facility operations, provide quality test and evaluation data, promote horizontal integration of processes Center-wide, and interoperate with downward-directed Government systems.

The proposal demonstrates the offeror's understanding and ability to manage complex industrial computing networks. The proposal further demonstrates thorough and sound approaches to ensure: reliable, timely, and accurate information is provided to customers; safe, responsive facility control; data is appropriately protected; and information assurance requirements are met.

The offeror provides a sound implementation plan for deployment of the proposed software/tools solution and identification of any supporting hardware or software infrastructure required and what components of the supporting infrastructure are GFE and CFE.

(3) PERSONNEL

The proposal demonstrates that the offeror's proposed personnel possess the experience and capabilities to understand, manage, and accomplish the Government's objectives and requirements identified in the SOO and PWS and to manage delivery of their proposal initiatives. The offeror proposes leadership that is experienced in management, operations, maintenance, and modernization of large, complex technical/industrial facilities; managing the full spectrum of support services vital to AUTECH's mission

accomplishment; and in managing change. The offeror proposes experienced senior technical leaders in the Center's core mission areas. The offeror proposes a sound approach for providing key personnel over the life of the contract. The offeror provides a compensation plan that is realistic and in reasonable relationship to the various job categories and wage rate baseline and labor categories provided by the Government.

(4) PAST PERFORMANCE

Past performance will be evaluated as an indicator of the offeror's expected future performance. The currency and relevance of the information, source of the information, context of the data, and general trends in contractor's performance are representative of the types of data that may be considered. The Government may communicate with points of contact listed in the offeror's proposal for the purpose of obtaining additional past performance information. The number of contacts, if any, will be determined by the Government at its discretion. Selection of contacts may be random.

(a) The Government may consider information concerning the offeror's past performance that is not contained in the proposal. This may include information furnished by points of contact not named in the proposal or information from other sources such as commercial rating services.

(b) In the case of an offeror without a record of relevant past performance or for whom information on past performance is not available, the offeror will not be evaluated favorably or unfavorably on past performance.

(d) **Cost.** The Government will evaluate proposed costs by performing a cost realism analysis as described in FAR 15.404-1(d) in order to determine if they are reasonable and realistic. This will include an evaluation of the extent to which proposed costs indicate a clear understanding of solicitation requirements, and reflect a sound approach to satisfying those requirements. The analysis will also include an evaluation of proposed wage compensation for non indigenous, Andros Island based personnel, to determine if there is reasonable and realistic relationship between the proposed labor costs and wage rate information provided by the Government (Attachment 11). If the Government evaluates an offer as unrealistically low compared to the anticipated costs of performance and the offeror fails to explain these underestimated costs, the Government will question the offeror's understanding of the technical requirements.

The cost realism analysis will include Government incurred costs or savings for initiatives when applicable. Material costs will be evaluated using the amounts shown in paragraph (d) of the provision in Section L entitled, Cost Proposal, plus applicable indirect costs. The analysis may differ from the proposed cost and reflects the Government's best estimate of the cost that is most likely to result from the offeror's proposal. The cost realism analysis will be used for purposes of evaluation to determine the best value. The analysis will cover costs for the 3-year base period, award terms, and price transition/phase-in period.

Recommended Minimum Wage Rates for Andros Island (By Occupational Category)
(Service Contract Act does not apply.)

Occupational Category		Minimum Wage Rate
Administrative Support and Clerical	Accounting Clerk II	\$ 9.39
	Accounting Clerk III	\$ 10.51
	Accounting Clerk IV	\$ 12.01
	General Clerk II	\$ 7.57
	General Clerk III	\$ 8.80
	General Clerk IV	\$ 9.84
	Maintenance Scheduler	\$ 9.94
	Order Clerk I	\$ 8.99
	Order Clerk II	\$ 10.66
	Personnel Assistant I	\$ 9.44
	Personnel Assistant II	\$ 10.01
	Personnel Assistant III	\$ 11.62
	Personnel Assistant IV	\$ 13.02
	Secretary I	\$ 9.11
	Secretary II	\$ 10.94
	Secretary III	\$ 12.87
	Secretary IV	\$ 14.08
	Supply Technician	\$ 13.62
Automatic Data Processing	Computer Data Librarian	\$ 11.08
	Computer Operator II	\$ 11.21
	Computer Operator III	\$ 13.30
	Computer Programmer II	\$ 18.36
	Computer Programmer III	\$ 22.31
	Computer Programmer IV	\$ 26.00
	Computer Systems Analyst I	\$ 16.11
	Computer Systems Analyst II	\$ 20.50
	Computer Systems Analyst III	\$ 24.64
Food Preparation and Service	Cook I (Main Mess Cook)	\$ 7.39
	Cook II (Lead Cook)	\$ 9.42
	Food Service Worker	\$ 6.83
General Services and Support	Janitor	\$ 7.49
	Laborer, Grounds Maintenance	\$ 8.97
Health	Registered Nurse	\$ 16.99
Information and Arts	Audio-Visual Librarian	\$ 11.35
Material Handling and Packing	Material Coordinator	\$ 11.55
	Material Expeditor	\$ 11.55
	Material Handling Laborer	\$ 9.40
	Store Worker I (Stock Clerk)	\$ 8.16
	Store Worker II	\$ 10.20
	Warehouse Specialist (Warehouse Worker)	\$ 9.30

Occupational Category		Minimum Wage Rate
Mechanics and Maintenance and Repair	Aircraft Mechanic	\$ 16.12
	Aircraft Mechanic Helper	\$ 13.15
	Aircraft Quality Control Inspector	\$ 13.73
	Carpenter, Maintenance	\$ 12.18
	Electronic (Maintenance) Technician I	\$ 11.76
	Electronic (Maintenance) Technician II	\$ 14.73
	Electronic (Maintenance) Technician III	\$ 17.54
	Heating, Refrigeration and AC Mechanic	\$ 13.38
	Heavy Equipment Mechanic	\$ 13.02
	Heavy Equipment Operator	\$ 13.82
	Locksmith	\$ 10.73
	Machinery Maintenance Mechanic	\$ 14.10
	Machinist	\$ 13.16
	Maintenance Electrician	\$ 14.52
	Master Plumber	\$ 14.37
	Welder	\$ 11.11
Miscellaneous	Cashier	\$ 6.18
	Desk Clerk	\$ 6.84
	Diver	\$ 10.87
	Recreation Specialist	\$ 12.64
	Vending Machine Attendant	\$ 9.02
Plant and System Operation	Boiler Tender	\$ 14.82
Protective Service	Firefighter/EMT	\$ 12.22
	Firefighter/Paramedic	\$ 12.57
	Guard I	\$ 7.35
	Guard II	\$ 8.47
Technical	Engineering Tech I	\$ 12.16
	Engineering Tech II	\$ 13.63
	Engineering Tech III	\$ 15.28
	Engineering Tech IV	\$ 16.56
	Engineering Tech V	\$ 17.67
	Engineering Tech VI	\$ 18.93
	Environmental Technician	\$ 13.77
	Flight Simulator/Instructor (Pilot)	\$ 20.69

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
ACCOUNTING CLERK II	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	Accounting Clerk II	Performs one or more routine accounting clerical operations, such as: examining, verifying, and correcting accounting transactions to insure completeness and accuracy of data and proper identification of accounts, and checking that expenditures will not exceed obligations in specified accounts; totaling, balancing, and reconciling collection vouchers; posting data to transaction sheets where employee identifies proper accounts and items to be posted; and coding documents in accordance with a chart (listing) of accounts. Employee follows specific and detailed accounting procedures. Completed work is reviewed for accuracy and compliance with procedures.
ACCOUNTANT	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	Accounting Clerk IV	Maintains journals or subsidiary ledgers of an accounting system and balances and reconciles accounts. Typical duties include one or both of the following: Reviews invoices and statements (verifying information, ensuring sufficient funds have been obligated, and if questionable, resolving with the submitting unit, determining accounts involved, coding transactions, and processing material through data processing for application in the accounting system); and/or analyzes and reconciles computer printouts with operating unit reports (contacting units and researching causes of discrepancies, and taking action to ensure that accounts balance). Employee resolves problems in recurring assignments in accordance with previous training and experience. Supervisor provides suggestions for handling unusual or nonrecurring transactions. Conformance with requirements and technical soundness of completed work are reviewed by the supervisor or are controlled by mechanisms built into the accounting system.
COORDINATOR, OCC	TECHNICAL OCCUPATIONS	AIR TRAFFIC CONTROL SPECIALIST STATION	Receives and transmits flight plans, meteorological, navigational, and other information in air traffic control station to perform preflight and emergency service for airplane pilots: Accepts flight plans from pilots in person or by telephone and reviews them for completeness. Routes plans for operating under instrument flight rules to control center and for operating under visual flight rules to station in vicinity of destination airport, using radio, teletype, radiotelephone, radiotelegraph, telephone, or interphone. Provides meteorological, navigational, and other information to pilots during flight, using radio. Relays traffic control and other instructions concerned with aircraft safety to pilots. Radios such information as identifying landmarks, beacons and available landing fields to pilots in flight. Maintains file of plans for operating under visual flight rules until completion of flight, and contacts facilities along route of flight to secure information on overdue aircraft. Reports lost aircraft to control center for rescue or local emergency services. Monitors such radio aids to navigation as range stations, fan markers and voice communication facilities, and notifies air personnel of availability of these facilities. Maintains written records of messages transmitted and received.
CHIEF HELO MAINTENANCE ROTARY WING MECHANIC	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	AIRCRAFT MECHANIC (AIRFRAME AND POWERPLANT MECHANIC)	Services, repairs, and overhauls aircraft and aircraft engines to ensure airworthiness. Repairs, replaces, and rebuilds aircraft structures, such as wings and fuselage, and functional components including rigging, surface controls, and plumbing and hydraulic units, using hand tools, power tools, machines, and equipment such as shears, sheet metal brake, welding equipment, rivet gun, and drills. Reads and interprets manufacturers' and airline's maintenance manuals, service bulletins, and other specifications to determine feasibility and method of repairing or replacing malfunctioning or damaged components. Examines engines for cracked cylinders and oil leaks, and listens to operating engine to detect and diagnose malfunctions, such as sticking or burnt valves. Inspects turbine blades to detect cracks or breaks. Tests engine operation, using testing equipment, such as ignition analyzer, compression checker, distributor timer, and ammeter, to locate source of malfunction. Replaces or repairs worn or damaged components, such as carburetors, alternators, and magnetos, using hand tools, gauges, and testing equipment. Removes engine from aircraft, using hoist or forklift truck. Disassembles and inspects parts for wear, warping, or other defects. Repairs or replaces defective engine parts and reassembles and installs engine in aircraft. Adjusts, repairs, or replaces electrical wiring system and aircraft accessories. Performs miscellaneous duties to service aircraft, including flushing crankcase, cleaning screens, greasing moving parts, and checking brakes. May be required to be licensed by Federal Aviation Administration. May service engines and airframe components at line station making repairs, short of overhaul, required to keep aircraft in safe operating condition. May specialize in work, repair and modification of structural, precision, and functional spare parts and assemblies. May specialize in engine repair.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
HELPER, ROTARY WING MECHANIC MECHANIC, ROTARY WING	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	AIRCRAFT MECHANIC HELPER (AIRFRAME AND POWERPLANT MECHANIC HELPER)	Assists Aircraft Mechanic in servicing, repairing and overhauling aircraft and aircraft engines, performing any combination of the following duties. Adjusts and replaces parts such as control cables, fuel tanks, spark plugs, tires, batteries and filters, using mechanic's tools. Removes inspection plates, cowling, engine covers, floor boards and related items to provide access for inspection and repair, and replaces items when work is completed. Disconnects instruments, ignition systems, and fuel and oil lines. Assists in dismantling, repairing, overhauling or replacing parts and assemblies such as engines, plumbing and hydraulic systems, and aircraft structural sections. Performs routine duties such as furnishing materials, tools and supplies to mechanic; lifting and holding materials in place during operation; cleaning work areas and machines, tools and equipment. Cleans aircraft, interior and exterior parts and assemblies with solvents or other cleaning solutions. Inflates tires, fills gasoline tanks and oil reservoirs, and greases aircraft, using grease gun. May assist flight line mechanic in servicing and repairing aircraft prior to flight.
SAFETY INSPECTOR TECH, WHE/MHE TEST CERT	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	AIRCRAFT QUALITY CONTROL INSPECTOR	Develops and implements quality control and ground safety programs to ensure compliance with contract specifications. Inspects and verifies proper completion and documentation of safety and flight discrepancies. Briefs and debriefs pilots and crew members assigned to functional check flights. Evaluates personnel, including verification of skills, training and experience. Performs audits and inspections of work centers and ongoing maintenance actions, procedures, equipment and facilities. Monitors timeliness and applicability of aircraft maintenance technical data and technical library. Reviews maintenance source documents, aircraft inspection records, notes recurring discrepancies or trends and initiates appropriate action. Manages the material deficiency and technical order improvement program. Reviews engineering investigation requests. Initiates and reviews quality deficiency reports, technical deficiency reports and hazardous material reports, ensuring that they are accurate, clear, concise and comprehensive. Receives aircraft and explosive mishap reports and studies them for applicability. Oversees aircraft weight and balance program. Conducts safety inspections, training and drills.
TECHNICIAN II, MULTI-MEDIA	INFORMATION AND ARTS OCCUPATIONS	AUDIO VISUAL LIBRARIAN	Plans audiovisual programs and administers library of film and other audiovisual materials. Assists patrons in selection of materials, utilizing knowledge of collections. Advises other library personnel on audiovisual materials and appropriate selection for particular needs and uses. Establishes and maintains contact with film distributors and other resources for procurement of tapes and cassettes. Evaluates materials, considering their technical, informational, and aesthetic qualities, and selects materials for library collections. Prepares summaries of acquisitions for catalog. Prepares and arranges audiovisual programs for presentation to groups and may lead discussions after film showings. Advises those planning audiovisual programs on technical problems, such as acoustics, lighting and program content. Evaluates audiovisual equipment and gives advice in selection of equipment, considering factors, such as intended use, quality, and price. May advise in planning and layout of physical facilities for audiovisual services. May operate film projectors, splicers, reminders, film inspection equipment, and tape and record playing equipment. May train personnel in operation and maintenance of audiovisual equipment.
OPERATOR, POWER PLANT	PLANT AND SYSTEM OPERATION OCCUPATIONS	BOILER TENDER	Tends one or more boilers to produce steam or high-temperature water for use in an establishment. Fires boiler. Observes and interprets readings on gauges, meters, and charts which register various aspects of boiler operation. Adjusts controls to insure safe and efficient boiler operation and to meet demands for steam or high-temperature water. May also do one or more of the following: Maintain a log in which various aspects of boiler operation are recorded; clean, oil, make minor repairs or assist in repair to boiler room equipment; and following prescribed methods, treat boiler water with chemicals and analyze boiler water for such things as acidity, causticity, and alkalinity.
CARPENTER	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	CARPENTER, MAINTENANCE	Performs the carpentry duties necessary to maintain in good repair building woodwork and equipment such as bins, cribs, counters, benches, partitions, doors, floors, stairs, casings, and trim made of wood. Work involves most of the following: Planning and laying out of work from blueprints, drawings, models, or verbal instructions, using a variety of carpenter's hand tools, portable power tools and standard measuring instruments; making standard shop computations relating to dimensions of work; and selecting materials necessary for the work. In general, the work of the maintenance carpenter requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
CASHIER CLERK/CASHIER COOK/CASHIER	MISCELLANEOUS OCCUPATIONS	CASHIER	Receives cash from customers or employees in payment for goods or services and records amounts received. Recomputes or computes bill, itemized lists, and tickets showing amount due, using adding machine or cash register. Makes change, cashes checks, and issues receipts or tickets to customers. Records amounts received and prepares reports of transactions. Reads and records totals shown on cash register tape and verifies against cash on hand. May make credit card transactions. May be required to know value and features of items for which money is received. May give cash refunds or issue credit memorandums to customers for returned merchandise. May operate ticket-dispensing machine. May sell candy, cigarettes, gum and gift certificates, and issue trading stamps. Usually employed in restaurants, cafeterias, theaters, retail stores, and other establishments.
LIBRARIAN SOFTWARE LIBRARIAN	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER DATA LIBRARIAN	Maintains library of media (tapes, disks, cards, cassettes) used for automatic data processing applications. Classifies, catalogs, and stores items in accordance with standardized system. Issues media for processing on request. Maintains record of items received, stored, issued, and returned. Examines returned media for damage or excessive wear to determine if they need replacing. May make minor repairs to damaged tapes.
ADMINISTRATOR, PHONE SWITCH COMPUTER OPERATOR II OPERATOR, MESSAGE CENTER	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER OPERATOR II	Processes scheduled routines which present few difficult operating problems (e.g., infrequent or easily resolved error conditions). In response to computer output instructions or error conditions, applies standard operating or corrective procedure. Refers problems which do not respond to preplanned procedure. May serve as an assistant operator, working under general supervision.
COMPUTER OPERATOR LEAD MESSAGE CENTER OPERATOR	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER OPERATOR III	Processes a range of scheduled routines. In addition to operating the system and resolving common error conditions, diagnoses and acts on machine stoppage and error conditions not fully covered by existing procedures and guidelines (e.g., resetting switches and other controls or making mechanical adjustments to maintain or restore equipment operations). In response to computer output instructions or error conditions, may deviate from standard procedures if standard procedures do not provide a solution. Refers problems which do not respond to corrective procedures.
SYSTEMS ADMINISTRATOR	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER PROGRAMMER II	At this level, initial assignments are designed to develop competence in applying established programming procedures to routine problems. Performs routine programming assignments that do not require skilled background experience but do require knowledge of established programming procedures and data processing requirements. Works according to clear cut and complete specifications. The data are refined and the format of the final product is very similar to that of the input or is well defined when significantly different, i.e., there are few, if any, problems with interrelating varied records and outputs.
SOFTWARE ENGINEER, ASSOC. TECHNICIAN, PC	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER PROGRAMMER III	As a fully qualified computer programmer, applies standard programming procedures and detailed knowledge of pertinent subject matter (e.g., work processes, governing rules, clerical procedures, etc.) in a programming area such as: a record keeping operation (supply, personnel and payroll, inventory, purchasing, insurance payments, depositor accounts, etc.); a well-defined statistical or scientific problem; or other standardized operation or problem. Works according to approved statements of requirements and detailed specifications. While the data are clear cut, related, and equally available, there may be substantial interrelationships of a variety of records and several varied sequences of formats are usually produced. The programs developed or modified typically are linked to several other programs in that the output of one becomes the input for another. Recognizes probable interactions of other related programs with the assigned program(s) and is familiar with related system software and computer equipment. Solves conventional programming problems. (In small organizations, may maintain programs which concern or combine several operations, i.e., users, or develop programs where there is one primary user and the others give input.)
SOFTWARE ENGINEER, JR. TECHNICIAN II, PC	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER PROGRAMMER IV	Adapts to a variety of nonstandard problems which require extensive operator intervention (e.g., frequent introduction of new programs, applications, or procedures). In response to computer output instructions or error conditions, chooses or devises a course of action from among several alternatives and alters or deviates from standard procedures if standard procedures do not provide a solution (e.g., reassigning equipment in order to work around faulty equipment or transfer channels); then refers problems. Typically, completed work is submitted to users without supervisory review.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
COOK/CASHIER COOK/MAIN MESS	FOOD PREPARATION AND SERVICE OCCUPATIONS	COOK I	Independently performs moderately difficult tasks in preparing small quantities of quickly prepared food such as steaks, chops, cutlets, hamburgers, eggs, salads and other similar items. Excludes workers who exercise general supervision over kitchen activities.
COOK, LEAD	FOOD PREPARATION AND SERVICE OCCUPATIONS	COOK II	Prepares in large quantities, by various methods of cooking, meat, poultry, fish, vegetables, etc. Seasons and cooks all cuts of various meats, fish and poultry. Boils, steams or fries vegetables. Makes gravies, soups, sauces, roasts, meat pies, fricassees, casseroles, and stews. Excludes food service supervisors and head cooks who exercise general supervision over kitchen activities.
CLERK, BILLETING	MISCELLANEOUS OCCUPATIONS	DESK CLERK	Performs any combination of the following duties for guests of hotel, motel, or other lodging facility: Registers and assigns rooms to guests. Issues and receives room keys. Date-stamps, sorts, and racks incoming mail and messages. Receives and transmits messages, using equipment such as telephone switchboard, console, telegraph, and Teletype. Answers inquiries pertaining to establishment services, shopping, dining, entertainment, and travel directions. Keeps records of room availability and guests' accounts. Computes bill, collects payment, and makes change for guests. Makes and confirms room reservations. May post charges such as room, food, liquor, or telephone to cash books by hand or machine. May make restaurant, transportation, or entertainment reservations, and arrange for tours. May deposit guests' valuables in safe or safe-deposit box. May sell tobacco, candy, and newspapers.
DIVER DIVER, SR	MISCELLANEOUS OCCUPATIONS	DIVER	Works below surface of water, using scuba gear (self-contained underwater breathing apparatus) or in diving suit with airline extending to surface to inspect, repair, remove, and install equipment and structures. Descends into water with aid of Diver Helper, and communicates with surface by signal line or telephone. Inspects docks, and bottoms and propellers of ships. Repairs vessels below waterline, replacing missing or leaking rivets with bolts. Calks leaks in ships or caissons. Guides placement of pilings for structures, such as docks, bridges, cofferdams, and oil drilling platforms. Lays, inspects, and repairs underwater pipelines, cables, and sewers, using hand tools. Cuts and welds steel, using oxyacetylene cutting torch and arc-welding equipment, utilizing air balloon device for working underwater. Cleans debris from intake and discharge strainers. Removes obstructions from marine railway or launching ways with pneumatic and power hand tools. Places rigging around sunken objects and hooks rigging to crane lines. Rigs explosives for underwater demolitions. Searches for lost, missing, or sunken objects, such as bodies, torpedoes, sunken vessels, and equipment. Places recording instruments below surface of water preparatory to underwater tests or experiments. May set sheet pilings for cofferdams. May drill holes in rock for blasting purposes at bottom of lake or harbor. May work in flooded mines. May use armored diving equipment for dangerous missions. May photograph underwater structures or marine life. May place sandbags around pipelines or base of cofferdam to provide structural support.
TECH, ELECTRONICS I	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	ELECTRONICS TECHNICIAN, MAINTENANCE I	Applies technical knowledge to perform simple or routine tasks following detailed instructions. Performs such tasks as replacing components and wiring circuits; repairing simple electronic equipment; and taking test readings using common instruments such as digital multimeters, signal generators, semiconductor testers, curve tracers, and oscilloscopes. Receives technical guidance, as required, from supervisor or higher level technician. Work is spot-checked for accuracy.
TECH, SITE COMM TIMING TECH	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	ELECTRONICS TECHNICIAN, MAINTENANCE II	Applies comprehensive technical knowledge to solve complex problems by interpreting manufacturers' manuals or similar documents. Work requires familiarity with the interrelationships of circuits and judgment in planning work sequence and in selecting tools and testing instruments. Receives technical guidance, as required, from supervisor or higher level technician, and work is reviewed for compliance with accepted practices. May provide technical guidance to lower level technicians.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
TECH, SITE COMM TIMING TECH TECH, ELEC III (PC TECH III)	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	ELECTRONICS TECHNICIAN, MAINTENANCE III	Applies advanced technical knowledge to solve unusually complex problems that typically cannot be solved solely by referencing manufacturers' manuals or similar documents. Examples of such problems include determining the location and density of circuitry, evaluating electromagnetic radiation, isolating malfunctions, and incorporating engineering changes. Work typically requires a detailed understanding of the interrelationships of circuits. Exercises independent judgment in performing such tasks as making circuit analyses, calculating wave forms, and tracing relationships in signal flow. Uses complex test instruments such as high frequency pulse generators, frequency synthesizers, distortion analyzers, and complex computer control equipment. Work may be reviewed by supervisor for general compliance with accepted practices. May provide technical guidance to lower level technicians.
ASST ENGINEER ENGINEER, ARCHITECTURAL ENGINEER, FIELD ENGINEER, FIELD, SR ENGINEER, MECHANICAL TEST CONDUCTOR TEST CONDUCTOR, SR TEST PLANNER	TECHNICAL OCCUPATIONS	ENGINEERING TECH I	Performs simple routine tasks under close supervision or from detailed procedures. Work is checked in progress or on completion. Performs one or a combination of such typical duties as: Assembles or installs equipment or parts requiring simple wiring, soldering, or connecting. Performs simple or routine tasks or tests such as tensile or hardness tests; operates and adjusts simple test equipment; records test data. Gathers and maintains specified records of engineering data such as tests, drawings, etc.; performs computations by substituting numbers in specified formulas; plots data and draws simple curves and graphs.
ASST ENGINEER ENGINEER, ARCHITECTURAL ENGINEER, FIELD ENGINEER, FIELD, SR ENGINEER, MECHANICAL TEST CONDUCTOR TEST CONDUCTOR, SR TEST PLANNER	TECHNICAL OCCUPATIONS	ENGINEERING TECH II	Performs standardized or prescribed assignments involving a sequence of related operations. Follows standard work methods on recurring assignments but receives explicit instructions on unfamiliar assignments; technical adequacy of routine work is reviewed on completion; nonroutine work may also be reviewed in progress. Performs at this level one or a combination of such typical duties as: Following specific instructions, assembles or constructs simple or standard equipment or parts; may service or repair simple instruments or equipment. Conducts a variety of tests using established methods. Prepares test specimens, adjusts and operates equipment, and records test data, pointing out deviations resulting from equipment malfunction or observational errors. Extracts engineering data from various prescribed but nonstandardized sources; processes the data following well-defined methods including elementary algebra and geometry; presents the data in prescribed form.
ASST ENGINEER ENGINEER, ARCHITECTURAL ENGINEER, FIELD ENGINEER, FIELD, SR ENGINEER, MECHANICAL TEST CONDUCTOR TEST CONDUCTOR, SR TEST PLANNER	TECHNICAL OCCUPATIONS	ENGINEERING TECH III	Performs assignments that are not completely standardized or prescribed. Selects or adapts standard procedures or equipment, using fully applicable precedents. Receives initial instructions, equipment requirements, and advice from supervisor or engineer as needed; performs recurring work independently; work is reviewed for technical adequacy or conformity with instructions. Performs at this level one or a combination of such typical duties as: Constructs components, subunits, or simple models or adapts standard equipment. May troubleshoot and correct malfunctions. Follows specific layout and scientific diagrams to construct and package simple devices and subunits of equipment. Conducts various tests or experiments which may require minor modifications in test setups or procedures as well as subjective judgments in measurement; selects, sets up, and operates standard test equipment and records test data. Extracts and compiles a variety of engineering data from field notes, manuals, lab reports, etc.; processes data, identifying errors or inconsistencies; selects methods of data presentation. Assists in design modification by compiling data related to design, specifications, and materials which are pertinent to specific items of equipment or component parts. Develops information concerning previous operational failures and modifications. Uses judgment and initiative to recognize inconsistencies or gaps in data and seek sources to clarify information.

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AUTC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
ASST ENGINEER ENGINEER, ARCHITECTURAL ENGINEER, FIELD ENGINEER, FIELD, SR ENGINEER, MECHANICAL TEST CONDUCTOR TEST CONDUCTOR, SR TEST PLANNER	TECHNICAL OCCUPATIONS	ENGINEERING TECH IV	<p>Performs nonroutine assignments of substantial variety and complexity, using operational precedents which are not fully applicable. Such assignments, which are typically parts of broader assignments, are screened to eliminate unusual design problems. May also plan such assignments. Receives technical advice from supervisor or engineer; work is reviewed for technical adequacy (or conformity with instructions). May be assisted by lower level technicians and have frequent contact with professionals and others within the establishment. Performs at this level one or a combination of such typical duties as:</p> <p>Develops or reviews designs by extracting and analyzing a variety of engineering data. Applies conventional engineering practices to develop, prepare, or recommend schematics, designs, specifications, electrical drawings and parts lists. Examples of designs include: detailed circuit diagrams; hardware fittings or test equipment involving a variety of mechanisms; conventional piping systems; and building site layouts.</p> <p>Conducts tests or experiments requiring selection and adaptation or modification of a wide variety of critical test equipment and test procedures; sets up and operates equipment; records data, measures and records problems of significant complexity that sometimes require resolution at a higher level; and analyzes data and prepares test reports.</p> <p>Applies methods outlined by others to limited segments of research and development projects; constructs experimental or prototype models to meet engineering requirements; conducts tests or experiments and redesigns as necessary; and records and evaluates data and reports findings.</p>
ASST ENGINEER ENGINEER, ARCHITECTURAL ENGINEER, FIELD ENGINEER, FIELD, SR ENGINEER, MECHANICAL TEST CONDUCTOR TEST CONDUCTOR, SR TEST PLANNER	TECHNICAL OCCUPATIONS	ENGINEERING TECH V	<p>Performs nonroutine and complex assignments involving responsibility for planning and conducting a complete project of relatively limited scope or a portion of a larger and more diverse project. Selects and adapts plans, techniques, designs, or layouts. Contacts personnel in related activities to resolve problems and coordinate the work; reviews, analyzes, and integrates the technical work of others. Supervisor or professional engineer outlines objectives, requirements, and design approaches; completed work is reviewed for technical adequacy and satisfaction of requirements. May train and be assisted by lower level technicians. Performs at this level one or a combination of such typical duties as:</p> <p>Designs, develops, and constructs major units, devices, or equipment; conducts tests or experiments; analyzes results and redesigns or modifies equipment to improve performance; and reports results.</p> <p>From general guidelines and specifications (e.g., size or weight requirements), develops designs for equipment without critical performance requirements which are difficult to satisfy such as engine parts, research instruments, or special purpose circuitry. Analyzes technical data to determine applicability to design problems; selects from several possible design layouts; calculates design data; and prepares layouts, detailed specifications, parts lists, estimates, procedures, etc. May check and analyze drawings or equipment to determine adequacy of drawings and design.</p> <p>Plans or assists in planning tests to evaluate equipment performance. Determines test requirements, equipment modification, and test procedures; conducts tests using all types of instruments; analyzes and evaluates test results, and prepares reports on findings and recommendations.</p>

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
ASST ENGINEER ENGINEER, ARCHITECTURAL ENGINEER, FIELD ENGINEER, FIELD, SR ENGINEER, MECHANICAL TEST CONDUCTOR TEST CONDUCTOR, SR TEST PLANNER	TECHNICAL OCCUPATIONS	ENGINEERING TECH VI	Independently plans and accomplishes complete projects or studies of broad scope and complexity. Or serves as an expert in a narrow aspect of a particular field of engineering, e.g., environmental factors affecting electronic engineering. Complexity of assignments typically requires considerable creativity and judgment to devise approaches to accomplish work, resolve design and operational problems, and make decisions in situations where standard engineering methods, procedures, and techniques may not be applicable. Supervisor or professional engineer provides advice on unusual or controversial problems or policy matters; completed work is reviewed for compliance with overall project objectives. May supervise or train and be assisted by lower level technicians. Performs, at this level, one or a combination of such typical duties as: Prepares designs and specifications for various complex equipment or systems (e.g., a heating system in an office building, or new electronic components such as solid state devices for instrumentation equipment). Plans approach to solve design problems; conceives and recommends new design techniques; resolves design problems with contract personnel, and assures compatibility of design with other parts of the system. Designs and coordinates test set ups and experiments to prove or disprove the feasibility of preliminary design; uses untried and untested measurement techniques; and improves the performance of the equipment. May advise equipment users on redesign to solve unique operational deficiencies. Plans approach and conducts various experiments to develop equipment or systems characterized by (a) difficult performance requirements because of conflicting attributes such as versatility, size, and ease of operation; or (b) unusual combination of techniques or components. Arranges for fabrication of pilot models and determines test procedures and design of special test equipment.
OPERATOR, HAZMART TECHNICIAN, HAZARDOUS WASTE	TECHNICAL OCCUPATIONS	ENVIRONMENTAL TECHNICIAN	Conducts tests and field investigations to obtain data for use by environmental, engineering and scientific personnel in determining sources and methods of controlling pollutants in air, water, and soil, utilizing knowledge of agriculture, chemistry, meteorology, and engineering principles and applied technologies. Conducts chemical and physical laboratory and field tests according to prescribed standards to determine characteristics or composition of solid, liquid, or gaseous materials and substances, using pH meter, chemicals, autoclaves, centrifuge spectrophotometer, microscope, analytical instrumentation, and chemical laboratory equipment. Collects samples of gases from smokestacks, and collects other air samples and meteorological data to assist in evaluation of atmospheric pollutants. Collects water samples from streams and lakes, or raw, semiprocessed or processed water, industrial waste water, or water from other sources to assess pollution problem. Collects soil, silt, or mud to determine chemical composition and nature of pollutants. Prepares sample for testing, records data, and prepares summaries and charts for review. Sets monitoring equipment to provide flow of information. Installs, operates, and performs routine maintenance on gas and fluid flow systems, chemical reaction systems, mechanical equipment, and other test instrumentation. May operate fixed or mobile monitoring or data collection station. May conduct bacteriological or other tests related to research in environmental or pollution control activity. May collect and analyze engine exhaust emissions to determine type and amount of pollutants. May specialize in one phase or type of environmental pollution or protection and be identified according to specialty.

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
FIRE FIGHTER/EMT	PROTECTIVE SERVICE OCCUPATIONS	FIREFIGHTER	Controls and extinguishes fires. May drive vehicle to scene of fire following predetermined route, or selecting alternate route when necessary. Positions vehicle considering such factors as wind direction, sources of water, hazards from falling structures, and location of armaments or aircraft. Operates pumps, foam generators, boom and ground sweeps nozzles, and other similar equipment. Uses a variety of special protective gear in situations where poisonous gases, radioactive materials, and hazardous biological products are involved. Determines proper pressures for the distances to be pumped and the number of lines being used. When operating a crash truck, maneuvers vehicle to keep the fire in optimum range while ensuring that backflash will not occur. Maintains a constant awareness of water levels in self-contained tanks and warns handline and rescueman when tanks are close to running dry. Performs daily preventive maintenance inspection of vehicle and equipment. Performs minor maintenance such as oil changes, replacing packing in pumps, and draining and flushing tanks, and otherwise ensuring that all equipment is in usable condition.
FIRE FIGHTER/PARAMEDIC	PROTECTIVE SERVICE OCCUPATIONS	FIREFIGHTER	Controls and extinguishes fires. May drive vehicle to scene of fire following predetermined route, or selecting alternate route when necessary. Positions vehicle considering such factors as wind direction, sources of water, hazards from falling structures, and location of armaments or aircraft. Operates pumps, foam generators, boom and ground sweeps nozzles, and other similar equipment. Uses a variety of special protective gear in situations where poisonous gases, radioactive materials, and hazardous biological products are involved. Determines proper pressures for the distances to be pumped and the number of lines being used. When operating a crash truck, maneuvers vehicle to keep the fire in optimum range while ensuring that backflash will not occur. Maintains a constant awareness of water levels in self-contained tanks and warns handline and rescueman when tanks are close to running dry. Performs daily preventive maintenance inspection of vehicle and equipment. Performs minor maintenance such as oil changes, replacing packing in pumps, and draining and flushing tanks, and otherwise ensuring that all equipment is in usable condition.
CAPTAIN, ROTARY WING CHIEF PILOT FIRST OFFICER, ROTARY WING	TECHNICAL OCCUPATIONS	FLIGHT SIMULATOR/INSTRUCTOR (PILOT)	Responsible to the Pilot Supervisor for the accomplishment of ground-based training of pilots. Instructs and measures training progress of pilot students who train in the established aircrew training curriculum. Conducts briefings and debriefings and counsels with pilots to develop and maintain a high level of proficiency. Provides inputs for courseware corrections and modifications and to update training policies and procedures. Assists in projects and development work as assigned.
D/R SITE SUPPORT WORKER	FOOD PREPARATION AND SERVICE OCCUPATIONS	FOOD SERVICE WORKER (CAFETERIA WORKER)	Performs a variety of tasks concerned with the preparation and serving of foods and beverages. Washes, peels, scrapes, and cuts vegetables and fruits. Prepares simple salads and toast. Cuts butter and slices cakes and pies. Makes coffee, tea, and other beverages. Dishes out portions of foods on trays or plates, and pours beverages. Prepares dining and serving areas by setting up counters, stands, and tables. Places food containers in serving order, fills salt and pepper shakers, and places linen and silverware on tables. Scrapes, washes, and sorts dishes, glassware, and silverware. Cleans kitchen equipment, pots and pans, counters, and tables. Sweeps and mops floors.
CLERK CLERK I CLERK I (DATA CONTROL) CLERK/MAIL SERVICE	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	GENERAL CLERK III	Work requires a familiarity with the terminology of the office unit. Selects appropriate methods from a wide variety of procedures or makes simple adaptations and interpretations of a limited number of substantive guides and manuals. The clerical steps often vary in type or sequence, depending on the task. Recognized problems are referred to others.

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
CLERK MARINE CLERK	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	GENERAL CLERK IV	Uses some subject-matter knowledge and judgement to complete assignments consisting of numerous steps that vary in nature and sequence. Selects from alternative methods and refers problems not solvable by adapting or interpreting substantive guides, manuals, or procedures. Typical duties include: assisting in a variety of administrative matters; maintaining a wide variety of financial or other records; verifying statistical reports for accuracy and completeness; and handling and adjusting complaints. May also direct lower level clerks. Positions above level IV are excluded. Such positions (which may include supervisory responsibility over lower level clerks) require workers to use a thorough knowledge of an office's work and routine to: 1) choose among widely varying methods and procedures to process complex transactions; and 2) select or devise steps necessary to complete assignments. Typical jobs covered by this exclusion include administrative assistants, clerical supervisors, and office managers.
GROUNDSKEEPER, SR.	GENERAL SERVICES AND SUPPORT OCCUPATIONS	LABORER, GROUNDS MAINTENANCE	Maintains grounds of industrial, commercial or public property such as buildings, camp and picnic grounds, parks, playgrounds, greenhouses, and athletic fields, and repairs structures and equipment, performing one or more of the following tasks: Cuts grass, using walking-type or riding mowers (less than 2000 lbs.). Trims hedges and edges around walks, flower beds, and wells, using hedge trimmers, clippers and edging tools. Prunes shrubs and trees to shape and improve growth, using shears and other hand tools. Sprays lawn, shrubs, and trees with fertilizer or insecticide. Plants grass, flowers, trees, and shrubs. Waters lawn and shrubs during dry periods, using hose or activating sprinkler system. Picks up and burns or carts away leaves, paper or other litter. Removes snow from walks, driveways, roads, or parking lots, using shovel and snow blower. Spreads salt on walkways and other areas. Repairs and paints fences, gates, benches, tables, guardrails, and outbuildings. Assists in repair of roads, walks, buildings, and mechanical equipment. May clean comfort stations, office and workshop areas, and parking lots by sweeping, washing, mopping and polishing.
GUARD	PROTECTIVE SERVICE OCCUPATIONS	GUARD I	Carries out instructions primarily oriented toward insuring that emergencies and security violations are readily discovered and reported to appropriate authority. Intervenes directly only in situations which require minimal action to safeguard property or persons. Duties require minimal training.
GUARD, LIEUTENANT GUARD, SERGEANT	PROTECTIVE SERVICE OCCUPATIONS	GUARD II	Enforces regulations designed to prevent breaches of security. Exercises judgment and use discretion in dealing with whether first response should be to intervene directly (asking for assistance when deemed necessary and time allows), to keep situation under surveillance, or to report situation so that it can be handled by appropriate authority. Duties require specialized training in methods and techniques of protecting security areas. Commonly, the guard is required to demonstrate continuing physical fitness and proficiency with firearms or other special weapons.
OPERATOR, HEAVY EQUIPMENT	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	HEAVY EQUIPMENT OPERATOR	Operates heavy equipment such as cranes, clamshells, power shovels, motor graders, heavy loaders, carryalls, bulldozers, rollers, scrapers, and large industrial tractors with pan or scrapper attachments. Equipment is used to excavate, load or move dirt, gravel or other materials. Operator may read and interpret grade and slope stakes and simple plans. May grease, adjust and make emergency repairs to equipment.
CERTIFIED TEACHER TEACHER, SUBSTITUTE COORDIN HEALTH/WEELLNESS (PT) LICENSING OFFICIAL	TECHNICAL OCCUPATIONS	INSTRUCTOR	Teaches courses in one or more subjects in commercial, governmental, industrial or service establishments. Prepares instructional program in accordance with training or other course requirements, assembling materials to be presented. Instructs students in the theoretical and practical aspects covering the subjects being taught. Utilizes such teaching methods as individual coaching, group discussions, lectures, demonstrations, seminars, and workshops. Selects or develops teaching aids such as wall charts, prepared notes, tape recordings, radio, television, films, film strips, and training handbooks. Supervises practical work carried out by students, and assists them at points of difficulty. Tests students to evaluate their learning progress and to evaluate effectiveness of instruction. Compiles assessment report regarding each student. May arrange visits to or periods of employment in real-work situations to reinforce instruction.
JANITOR LEAD, JANITOR	GENERAL SERVICES AND SUPPORT OCCUPATIONS	JANITOR	Cleans and keeps in an orderly condition factory working areas and washrooms, or premises of an office, apartment house, or commercial or other establishment. Duties involve a combination of the following: Sweeping, mopping or scrubbing, and polishing floors; removing chips, trash, and other refuse; dusting equipment, furniture, or fixtures; polishing metal fixtures or trimmings; providing supplies and minor maintenance services; and cleaning lavatories, showers, and restrooms.

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
LOCKSMITH	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	LOCKSMITH	Installs, repairs, modifies, and opens a variety of locking mechanisms found on doors, desks, compartments, mobile equipment, safes, and vaults. Examines locking mechanism and installs new unit or disassembles unit and replaces worn tumblers, springs, and other parts or repairs them by filing, drilling, chiseling and grinding. Opens door locks by moving lockpick in cylinder or opens safe locks by listening to lock sounds or by drilling. Makes new or duplicate keys, using key cutting machine. Changes combination by inserting new or repaired tumblers into lock. Establishes keying systems for buildings.
MECHANIC, POWER PLANT	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	MACHINERY MAINTENANCE MECHANIC	Repairs machinery or mechanical equipment. Work involves most of the following: Examining machines and mechanical equipment to diagnose source of trouble; dismantling or partly dismantling machines and performing repairs that mainly involve the use of hand tools in scraping and fitting parts; replacing broken or defective parts with items obtained from stock; ordering the production of a replacement part by a machine shop or sending the machine to a machine shop for major repairs; preparing written specifications for major repairs or for the production of parts ordered from machine shops; reassembling machines and making all necessary adjustments for operation. In general, the work of a Machinery Maintenance Mechanic requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience. Excluded from this classification are workers whose primary duties involve setting up or adjusting machines.
MACHINIST	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	MACHINIST, MAINTENANCE	Produces replacement parts and new parts in making repairs of metal parts of mechanical equipment. Work involves most of the following: Interpreting written instructions and specifications; planning and laying out of work; using a variety of machinist's hand tools and precision measuring instruments; setting up and operating standard machine tools; shaping of metal parts to close tolerances; making standard shop computations relating to dimensions of work, tooling, feeds, and speeds of machining; knowledge of the working properties of the common metals; selecting standard materials, parts, and equipment required for this work; and fitting and assembling parts into mechanical equipment. In general, the machinist's work normally requires a rounded training in machine-shop practice usually acquired through a formal apprenticeship or equivalent training and experience.
ELECTRICIAN, POWER PLANT	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	ELECTRICIAN, MAINTENANCE	Performs a variety of electrical trade functions such as the installation, maintenance, or repair of equipment for the generation, distribution, or utilization of electric energy. Work involves most of the following: Installing or repairing any of a variety of electrical equipment such as generators, transformers, switchboards, controllers, circuit breakers, motors, heating units, conduit systems, or other transmission equipment; working from blueprints, drawings, layouts, or other specifications; locating and diagnosing trouble in the electrical system or equipment; working standard computations relating to load requirements of wiring or electrical equipment; and using a variety of electrician's hand tools and measuring and testing instruments. In general, the work of the maintenance electrician requires rounded training and experience usually acquired through a formal apprenticeship or equivalent training and experience.
COORDINATOR, WORK CONTROL	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	SCHEDULER, MAINTENANCE	Schedules repairs and lubrication of motor vehicles for vehicle-maintenance concern or company automotive-service shop. Schedules vehicles for lubrication or repairs based on date of last lubrication and mileage traveled or urgency of repairs. Contacts garage to verify availability of facilities. Notifies parking garage workers to deliver specified vehicles. Maintains file of requests for services.

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
COORDINATOR, PROPERTY DISP COORDINATOR, MATERIAL	MATERIALS HANDLING AND PACKING OCCUPATIONS	MATERIAL COORDINATOR	Coordinates and expedites flow of material, parts, and assemblies within or between departments in accordance with production and shipping schedules or department supervisors' priorities. Reviews production schedules and confers with department supervisors to determine material required or overdue and to locate material. Requisitions material and establishes delivery sequences to departments according to job order priorities and anticipated availability of material. Arranges for in-plant transfer of materials to meet production schedules. Arranges with department supervisors for repair and assembly of material and its transportation to various departments. Examines material delivered to production departments to verify if type specified. May monitor and control movement of material and parts along conveyor system, using remote-control panelboard. May compute amount of material needed for specific job orders, applying knowledge of product and manufacturing processes and using adding machine. May compile report of quantity and type of material on hand. May move or transport material from one department to another, using hand truck or industrial truck. May compile perpetual production records in order to locate material in process of production, using manual or computerized system. May maintain employee records.
LEAD, WAREHOUSE	MATERIALS HANDLING AND PACKING OCCUPATIONS	MATERIAL EXPEDITOR	Locates and moves materials and parts between work areas of plant to expedite processing of goods, according to predetermined schedules and priorities, and keeps related records: Reviews production schedules inventory reports, and work orders to determine types, quantities, and availability of required material and priorities of customer orders. Confers with department supervisors to determine materials overdue and to inform them of location, availability, and condition of materials. Locates and moves materials to specified production areas, using cart or hand truck. Records quantity and type of materials distributed and on hand. May direct power-truck operator or Material Handling Laborer to expedite movement of materials between storage and production areas. May compare work ticket specifications with material at work stations to verify appropriateness of material in use. May prepare worker production records and timecards. May update and maintain inventory records, using computer terminal.
CARGO HANDLER	MATERIALS HANDLING AND PACKING OCCUPATIONS	MATERIAL HANDLING LABORER	Performs physical tasks to transport or store materials or merchandise. Duties involve one or more of the following: Manually loading or unloading freight cars, trucks, or other transporting devices; unpacking, shelving, or placing items in proper storage locations; or transporting goods by hand truck, cart, or wheelbarrow.
MECHANIC, HEAVY EQUIPMENT	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	HEAVY EQUIPMENT MECHANIC	Analyzes malfunctions and repairs, rebuilds and maintains power equipment, such as cranes, power shovels, scrapers, paving machines, motor graders, trench-digging machines, conveyors, bulldozers, dredges, pumps, compressors and pneumatic tools. Operates and inspects machines or equipment to diagnose defects. Dismantles and reassembles equipment, using hoists and hand tools. Examines parts for damage or excessive wear, using micrometers and gauges. Replaces defective engines and subassemblies, such as transmissions. Tests overhauled equipment to insure operating efficiency. Welds broken parts and structural members. May direct workers engaged in cleaning parts and assisting with assembly and disassembly of equipment. May repair, adjust and maintain mining machinery, such as stripping and loading shovels, drilling and cutting machines, and continuous mining machines.

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
MECHANIC, A/C AND R	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	HEATING, REFRIGERATION AND AIR CONDITIONING MECHANIC	Installs, services and repairs environmental-control systems in residences, department stores, office buildings and other commercial establishments, utilizing knowledge of refrigeration theory, pipefitting and structural layout. Mounts compressor and condenser units on platform or floor, using hand tools, following blueprints or engineering specifications. Fabricates, assembles and installs ductwork and chassis parts, using portable metalworking tools and welding equipment. Installs evaporator unit in chassis or in air-duct system, using hand tools. Cuts and bends tubing to correct length and shape, using cutting and bending equipment and tools. Cuts and threads pipe, using machine-threading or hand-threading equipment. Joins tubing or pipes to various refrigerating units by means of sleeves, couplings or unions, and solders joints, using torch, forming complete circuit for refrigerant. Installs expansion and discharge valves in circuit. Connects motors, compressors, temperature controls, humidity controls and circulating ventilation fans to control panels and connects control panels to power source. Installs air and water filters in completed installation. Injects small amount of refrigerant into compressor to test systems and adds freon gas to build up prescribed operating pressure. Observes pressure and vacuum gauges and adjusts controls to insure proper operation. Tests joints and connections for gas leaks, using gauges or soap-and-water solution. Wraps pipes in insulation batting and secures them in place with cement or wire bands. Replaces defective breaker controls, thermostats, switches, fuses and electrical wiring to repair installed units, using electrician's hand tools and test equipment. May install, repair and service air conditioners, ranging from fifteen to twenty tons cooling capacity, in warehouses and small factory buildings.
NURSE, REGISTERED	HEALTH OCCUPATIONS	REGISTERED NURSE I	Provides comprehensive general nursing care to patients whose conditions and treatment are normally uncomplicated. Follows established procedures, standing orders, and doctor's instructions. Uses judgment in selecting guidelines appropriate to changing patient conditions. Routine duties are performed independently; variations from established routines are performed under specific instructions.
CLERK, SUPPLY	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	ORDER CLERK I AND ORDER CLERK II	Order Clerk I: Handles orders involving items which have readily identified uses and applications. May refer to a catalog, manufacturer's manual or similar document to insure that proper item is supplied or to verify price of ordered item. Order Clerk II: Handles orders that involve making judgments such as choosing which specific product or material from the establishment's product lines will satisfy the customer's needs, or determining the price to be quoted when pricing involves more than merely referring to a price list or making some simple mathematical calculations.
ADMINISTRATOR, PERSONNEL	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	PERSONNEL ASSISTANT (EMPLOYMENT) I	Performs routine tasks which require a knowledge of personnel procedures and rules, such as: providing simple employment information and appropriate lists and forms to applicants or employees on types of jobs being filled, procedures to follow, and where to obtain additional information; ensuring that the proper forms are completed for name changes, locator information, applications, etc. and reviewing completed forms for signatures and proper entries; or maintaining personnel records, contacting appropriate sources to secure any missing items, and posting items such as dates of promotions, transfer, and hire, or rates of pay or personal data. If this information is computerized, outside inquiries for simple factual information, such as verification of dates of employment in response to telephone credit checks of employees. Some receptionist or other clerical duties may be performed. May be assigned work to provide training for a higher level position. Detailed rules and procedures are available for all assignments. Guidance and assistance on unusual questions are available at all times. Work is spot checked, often on a daily basis.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
ADMINISTRATOR, PERSONNEL	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	PERSONNEL ASSISTANT (EMPLOYMENT) II	Examines and/or processes personnel action documents using experience in applying personnel procedures and policies. Ensures that information is complete and consistent and determines whether further discussion with applicants or employees is needed or whether personnel information must be checked against additional files or listings. Selects appropriate precedents, rules, or procedures from a number of alternatives. Responds to varied questions from applicants, employees, or managers for readily available information which can be obtained from file material or manuals; responses require skill to secure cooperation in correcting improperly completed personnel documents or to explain regulations and procedures. May provide information to managers on availability of applicants and status of hiring actions; may verify employment dates and places supplied on job applications; may maintain personnel records; and may administer typing and stenography test. Completes routine assignments independently. Detailed guidance is available for situations which deviate from established precedents. Clerks/assistants are relied upon to alert higher level clerks/assistants or supervisor to such situations. Work may be spot checked periodically.
ADMINISTRATOR, PERSONNEL	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	PERSONNEL ASSISTANT (EMPLOYMENT) III	Serves as a clerical expert in independently processing the most complicated types of personnel actions, e.g., temporary employment, rehires, and dismissals and in providing information when it is necessary to consolidate data from a number sources, often with short deadlines. Screens applications for obvious rejections. Resolves conflicts in computer listings or other sources of employee information. Locates lost documents or reconstructs information using a number of sources. May check references of applicants when information in addition to dates and places of past work is needed, and judgment is required to ask appropriate routine follow-up questions. May provide guidance to lower level clerks. Supervisory review is similar to level II. AND/OR Performs routine personnel assignments beyond the clerical level, such as: orienting new employees to programs, facilities, rules on time and attendance, and leave policies; computing basic statistical information for reports on manpower profiles, EEO progress and accomplishments, hiring activities, attendance and leave profiles, turnover, etc.; and screening applicants for well-defined positions, rejecting those who do not qualify for available openings for clear cut reasons, referring others to appropriate employment interviewer. Guidance is provided on possible sources of information, methods of work, and types of reports needed. Completed written work receives close technical review from higher level personnel office employees; other work may be checked occasionally.
ADMINISTRATOR, PERSONNEL	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	PERSONNEL ASSISTANT (EMPLOYMENT) IV	Performs work in support of personnel professionals which requires a good working knowledge of personnel procedures, guides, and precedents. In representative assignments: interviews applicants, obtains references, and recommends placement of applicants in a few well-defined occupations (trade or clerical) within a stable organization or unit; conducts post-placement or exit interviews to identify job adjustment problems or reasons for leaving the organization; performs routine statistical analyses related to manpower, EEO, hiring, or other employment concerns, e.g., compares one set of data to another set as instructed; and requisitions applicants through employment agencies for clerical or blue collar jobs. At this level, assistants typically have a range of personal contacts within and outside the organization and with applicants, and must be tactful and articulate. May perform some clerical work in addition to the above duties. Supervisor reviews completed work against stated objectives.

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
PLUMBER, MASTER	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	PLUMBER, MAINTENANCE	Assembles, installs and repairs pipes, fittings and fixtures of heating, water, and drainage systems, according to specifications and plumbing codes. Studies building plans and working drawings to determine work aids required and sequence of installations. Inspects structure to ascertain obstructions to be avoided to prevent weakening of structure resulting from installation of pipe. Locates and marks position of pipe and pipe connections and passage holes for pipes in walls and floors, using ruler, spirit level and plumb bob. Cuts openings in walls and floors to accommodate pipe and pipe fittings, using hand tools and power tools. Cuts and threads pipe, using pipe cutters, cutting torch, and pipe-threading machine. Bends pipe to required angle by use of pipe-bending machine or by placing pipe over block and bending it by hand. Assembles and installs valves, pipe fittings, and pipes composed of metals, such as iron, steel, brass and lead, and nonmetals, such as glass, vitrified clay, and plastic, using hand tools and power tools. Joins pipe by use of screws, bolts, fittings, solder, plastic solvent, and calks joints. Fills pipe system with water or air and reads pressure gauges to determine whether system is leaking. Installs and repairs plumbing fixtures, such as sinks, commodes, bathtubs, water heaters, hot water tanks, garbage disposal units, dishwashers, and water softeners. Repairs and maintains plumbing by replacing washers in leaky faucets, mending burst pipes, and opening clogged drains. May weld holding fixtures to steel structural members.
RECREATION SPECIALIST AIDE, RECREATION ASST SUPERVISOR SPECIALIST, RECREATION SR	MISCELLANEOUS OCCUPATIONS	RECREATION SPECIALIST	Plans, organizes, and directs comprehensive public and voluntary recreation programs at recreation building, indoor center, playground, playfield, or day camp. Studies and analyzes recreational needs and resources. Oversees and assigns duties to staff. Interprets recreation programs and their philosophy to individuals and groups through personal participation and staff assignments. Schedules maintenance and use of facilities.
ASST, ADMINISTRATIVE ASST, NAVY LIAISON OFFICE	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	SECRETARY I	LR-1 Carries out recurring office procedures independently. Selects the guideline or reference which fits the specific case. Supervisor provides specific instructions on new assignments and checks completed work for accuracy. Performs varied duties including or comparable to the following: 1. Responds to routine telephone requests which have standard answers; refers calls and visitors to appropriate staff. Controls mail and assures timely staff response; may send form letters; 2. As instructed, maintains supervisor's calendar, makes appointments, and arranges for meeting rooms; 3. Reviews materials prepared for supervisor's approval for typographical accuracy and proper format; 4. Maintains recurring internal reports, such as time and leave records, office equipment listings, correspondence controls, and training plans; 5. Requisitions supplies, printing, maintenance, or other services. Types, takes and transcribes dictation, and establishes and maintains office files.
ASST, NAVY LIAISON OFFICE REPRESENTATIVE, IS SECURITY SECRETARY SPECIALIST, ADMINISTRATIVE SECRETARY II	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	SECRETARY II	LR-2 Handles differing situations, problems, and deviations in the work of the office according to the supervisor's general instructions, priorities, duties, policies, and program goals. Supervisor may assist secretary with special assignments. Duties include or are comparable to the following: 1. Screens telephone calls, visitors, and incoming correspondence; personally responds to requests for information concerning office procedures; determines which requests should be handled by the supervisor, appropriate staff member or other offices. May prepare and sign routine, nontechnical correspondence in own or supervisor's name; 2. Schedules tentative appointments without prior clearance. Makes arrangements for conferences and meetings and assembles established background materials, as directed. May attend meetings and record and report on the proceedings; 3. Reviews outgoing materials and correspondence for internal consistency and conformance with supervisor's procedures; assures that proper clearances have been obtained, when needed; 4. Collects information from the files or staff for routine inquiries on office program(s) or periodic reports. Refers nonroutine requests to supervisor or staff; 5. Explains to subordinate staff supervisor's requirements concerning office procedures. Coordinates personnel and administrative forms for the office and forwards for processing.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
SPECIALIST, ADMINISTRATIVE SPECIALIST, ADMIN SR SPECIALIST, DOC CONTROL SPECIALIST, IND SECURITY	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	SECRETARY III	<p>LR-3 Uses greater judgment and initiative to determine the approach or action to take in nonroutine situations. Interprets and adapts guidelines, including unwritten policies, precedents, and practices, which are not always completely applicable to changing situations. Duties include or are comparable to the following:</p> <p>Based on a knowledge of the supervisor's views, composes correspondence on own initiative about administrative matters and general office policies for supervisor's approval;</p> <p>Anticipates and prepares materials needed by the supervisor for conferences, correspondence, appointments, meetings, telephone calls, etc., and informs supervisor on matters to be considered;</p> <p>Reads publications, regulations, and directives and takes action or refers those that are important to the supervisor and staff;</p> <p>Prepares special or one-time reports, summaries, or replies to inquiries, selecting relevant information from a variety of sources such as reports, documents, correspondence, other offices, etc., under general directions;</p> <p>Advises secretaries in subordinate offices on new procedures; requests information needed from the subordinate office(s) for periodic or special conferences, reports, inquiries, etc. Shifts clerical staff to accommodate workload needs.</p>
SPECIALIST, ADMINISTRATIVE	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	SECRETARY IV	<p>LR-4 Handles a wide variety of situations and conflicts involving the clerical or administrative functions of the office which often cannot be brought to the attention of the executive. The executive sets the overall objectives of the work. Secretary may participate in developing the work deadlines. Duties include or are comparable to the following</p> <p>Composes correspondence requiring some understanding of technical matters; may sign for executive when technical or policy content has been authorized;</p> <p>Notes commitments made by executive during meetings and arranges for staff implementation.</p> <p>On own initiative, arranges for staff member to represent organization at conferences and meetings, establishes appointment priorities, or reschedules or refuses appointments or invitations;</p> <p>Reads outgoing correspondence for executive's approval and alerts writers to any conflict with the file or departure from policies or executive's viewpoints; gives advice to resolve the problems;</p> <p>Summarizes the content of incoming materials, specially gathered information, or meetings to assist executive; coordinates the new information with background office sources; draws attention to important parts or conflicts;</p> <p>In the executive's absence, ensures that requests for action or information are relayed to the appropriate staff member; as needed, interprets request and helps implement action; makes sure that information is furnished in timely manner; decides whether executive should be notified of important or emergency matters.</p>
CLERK, STOCK CONTROL	MATERIALS HANDLING AND PACKING OCCUPATIONS	STOCK CLERK (STORE WORKER II)	<p>Receives, stores, and issues equipment, materials, supplies, merchandise, foodstuffs, or tools, and compiles stock records of items in stockroom, warehouse or storage yard. Counts, sorts, or weighs incoming articles to verify receipt of items on requisition or invoice. Examines stock to verify conformance to specifications. Stores articles in bins, on floor or on shelves, according to identifying information, such as style, size or type of material. Fills orders or issues supplies from stock. Prepares periodic, special or perpetual inventory of stock. Requisitions articles to fill incoming orders. Compiles reports on use of stock handling equipment, adjustments of inventory counts and stock records, spoilage of or damage to stock, location changes, and refusal of shipments. May mark identifying codes, figures, or letters on articles. May distribute stock among production workers, keeping records of material issued. May make adjustments or repairs to articles carried in stock. May cut stock to size to fill order.</p>

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AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
CLERK, STORE	MATERIALS HANDLING AND PACKING OCCUPATIONS	STORE WORKER I	Performs the following tasks at an establishment whose primary function is that of the resale of merchandise in a retail environment. Will move merchandise by use of non-motorized equipment that is intended for display and resale purposes. Will include the cleaning of merchandise on or in display fixtures utilizing various merchandise techniques common to retail trade. Merchandise may be displayed by a predetermined placement system using labels or other identifying marks. Will maintain the display sales area by straightening merchandise to give a neat, full, and salable appearance, removing damaged or outdated merchandise, and displaying merchandise in such a manner to maintain freshness and sale dates. May determine display or sale requirements from existing inventory. May be required to keep inventory forms of merchandise stocked and merchandise returned to storage. May be required to affix labels to merchandise indicating sale price, item description, or other information. May be required to offer customer or patron assistance with the location or selection of merchandise.
CLERK, SUPPLY ADMINISTRATOR, SUPPLY SPECIALIST, LOGISTICS	ADMINISTRATIVE SUPPORT AND CLERICAL OCCUPATIONS	SUPPLY TECHNICIAN	Performs limited aspects of technical supply management work (e.g., inventory management, storage management, cataloging, property utilization) related to depot, local, or other supply activities. Work usually is segregated by commodity area or function, and controlled in terms of difficulty, complexity, or responsibility. Assignments usually relate to stable or standardized segments of technical supply management operations; or to functions or subjects that are narrow in scope or limited in difficulty. The work generally involves individual case problems or supply actions. This work may require consideration of program requirements, together with specific variations in or from standardized guidelines. Assignments require (a) a good working knowledge of the governing supply systems, programs, policies, nomenclature, work methods, manuals, or other established guidelines; (b) an understanding of the needs of the organization serviced; and (c) analytical ability to define or recognize the dimension of the problems involved, to collect the necessary data, to establish the facts, and to take or recommend action based upon application or interpretation of established guidelines.
ANALYST I, DATA DATA ANALYST DATA ANALYST, JR DATA ANALYST, SR. MATHEMATICIAN SYS CONTROLLER (DATA GRAPHIC) SYSTEMS CONTROLLER SYSTEMS CONTROLLER, SR., SYSTEMS ANALYST, SYSTEMS ANALYST SR.	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER SYSTEMS ANALYST I	At this level, initial assignments are designed to expand practical experience in applying systems analysis techniques and procedures. Provides several phases of the required systems analysis where the nature of the system is predetermined. Uses established fact finding approaches, knowledge of pertinent work processes and procedures, and familiarity with related computer programming practices, system software, and computer equipment.
ANALYST I, DATA DATA ANALYST DATA ANALYST, JR DATA ANALYST, SR. MATHEMATICIAN SYS CONTROLLER (DATA GRAPHIC) SYSTEMS CONTROLLER SYSTEMS CONTROLLER, SR., SYSTEMS ANALYST, SYSTEMS ANALYST SR.	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER SYSTEMS ANALYST II	Applies systems analysis and design skills in an area such as a record keeping or scientific operation. A system of several varied sequences or formats is usually developed, e.g., develops systems for maintaining depositor accounts in a bank, maintaining accounts receivable in a retail establishment, maintaining inventory accounts in a manufacturing or wholesale establishment, or processing a limited problem in a scientific project. Requires competence in most phases of system analysis and knowledge of pertinent system software and computer equipment and of the work processes, applicable regulations, work load, and practices of the assigned subject-matter area. Recognizes probable interactions of related computer systems and predicts impact of a change in assigned system.
ANALYST I, DATA DATA ANALYST DATA ANALYST, JR DATA ANALYST, SR. MATHEMATICIAN SYS CONTROLLER (DATA GRAPHIC) SYSTEMS CONTROLLER SYSTEMS CONTROLLER, SR., SYSTEMS ANALYST, SYSTEMS ANALYST SR.	AUTOMATIC DATA PROCESSING OCCUPATIONS	COMPUTER SYSTEMS ANALYST III	Applies systems analysis and design techniques to complex computer systems in a broad area such as manufacturing; finance management; engineering, accounting, or statistics; logistics planning; material management, etc. Usually, there are multiple users of the system, however, there may be complex one-user systems, e.g., for engineering or research projects. Requires competence in all phases of systems analysis techniques, concepts, and methods and knowledge of available system software, computer equipment, and the regulations, structure, techniques, and management practices of one or more subject-matter areas. Since input data usually come from diverse sources is responsible for recognizing probable conflicts and integrating diverse data elements and sources. Produces innovative solutions for a variety of complex problems.

JOB DESCRIPTION SUMMARIES (Note: This is for Andros Island only. Service Contract Act does not apply.)

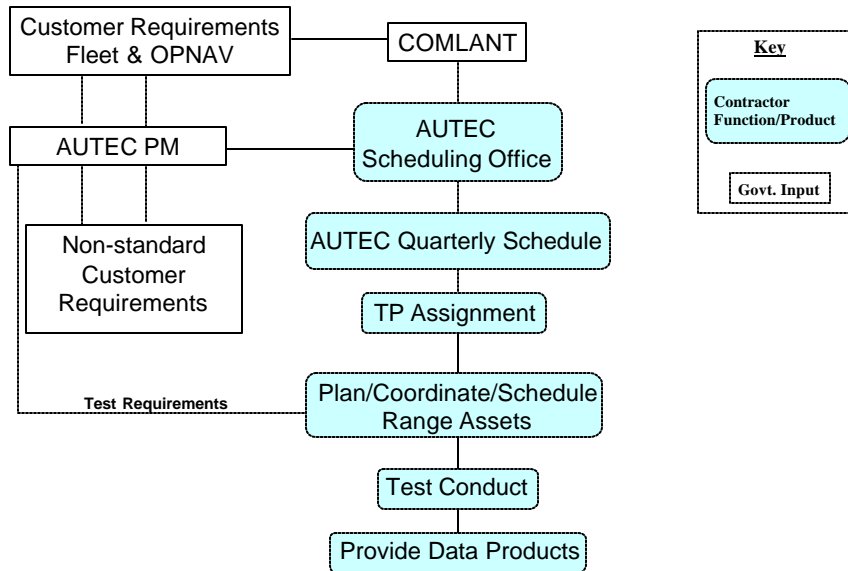
AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
TECHS (LAUNCH/RCVRY DOC'N, CHIEF WEAPONS, DIVER/RECOVERY SYSTEMS, DIVER/WEAPONS, LAUNCH SYSTEMS, MINEFIELD DEPLOY/RECOVER, RECOVERY SYSTEMS, WEAPONS F III), WEAPONS HANDLER, OPERATOR WEAPON/TARGET RECVRY	TECHNICAL OCCUPATIONS	UNEXPLODED ORDNANCE (UXO) TECHNICIAN I	<p>Assist in performing: reconnaissance and classification of UXO. Identification of U.S. and foreign guided missiles; bombs and bomb fuzes; projectiles and projectile fuzes; grenades and grenade fuzes; rockets and rocket fuzes; land mines and associated components; pyrotechnic items; military explosives and demolition materials.</p> <p>Perform location of subsurface UXO using military and/or civilian magnetometers. Assists in performing excavation procedures on buried UXO. Perform operator maintenance of military and/or civilian magnetometers. Locate surface UXO using visual means. Assist in transporting and storing UXO and demolition materials.</p> <p>Assist in preparing non-electric firing system for an UXO disposal operation. Assist in preparing electric firing system for an UXO disposal operation disposing of ammunition/ explosives by burning; disposing of ammunition/explosives by detonation. Assist in the operation of a personnel decontamination station. Don and Doff appropriate personal protective equipment in contaminated areas. Assist in the inspection of salvage UXO-related material and erection of UXO-related protective works.</p>
TECHS (LAUNCH/RCVRY DOC'N, CHIEF WEAPONS, DIVER/RECOVERY SYSTEMS, DIVER/WEAPONS, LAUNCH SYSTEMS, MINEFIELD DEPLOY/RECOVER, RECOVERY SYSTEMS, WEAPONS F III), WEAPONS HANDLER, OPERATOR WEAPON/TARGET RECVRY	TECHNICAL OCCUPATIONS	UNEXPLODED ORDNANCE (UXO) TECHNICIAN II	<p>Perform: reconnaissance and classification of UXO; identification of U.S. and foreign guided missiles; bombs and bomb fuzes; projectiles and projectile fuzes; grenades and grenades fuzes rockets and rocket fuzes; land mines and associated components; pyrotechnics; military explosives and demolition materials</p> <p>Locate subsurface UXO using military and/or civilian magnetometers. Perform excavation procedures on buried UXO by manual means; mechanical means. Perform operator maintenance of military and/or civilian magnetometers. Locate surface UXO using visual mean. Operate motor vehicle transporting UXO. Prepare an on-site safe holding area for UXO.</p> <p>Perform storage of UXO and demolition materials. Prepare an UXO disposal site. Prepare non-electric firing system for an UXO disposal operation; electric firing system for an UXO disposal operation; a detonating cord firing system. Dispose of UXO/explosives by burning; detonation. Operate a personnel decontamination station. Don and doff appropriate personal protective equipment in contaminated areas.</p> <p>Inspect salvage UXO-related material. Erect UXO-related protective works. Determine a magnetic azimuth using a lensatic compass. Perform field expedient identification procedures to ID explosive-contaminated soil. Perform emergency leak seal and packaging of chemical warfare material. Use radiographic (x-ray) equipment.</p>
TECHS (LAUNCH/RCVRY DOC'N, CHIEF WEAPONS, DIVER/RECOVERY SYSTEMS, DIVER/WEAPONS, LAUNCH SYSTEMS, MINEFIELD DEPLOY/RECOVER, RECOVERY SYSTEMS, WEAPONS F III), WEAPONS HANDLER, OPERATOR WEAPON/TARGET RECVRY	TECHNICAL OCCUPATIONS	UNEXPLODED ORDNANCE (UXO) TECHNICIAN III	<p>Perform: reconnaissance and classification of UXO; identification of U.S. and foreign guided missiles; bombs and bomb fuzes; projectiles and projectile fuzes; grenades and grenade fuzes; rockets and rocket fuzes; land mines and associated components; pyrotechnic items; military explosives and demolition materials.</p> <p>Supervise: the location of subsurface UXO using military and/or civilian magnetometers. Supervises the excavation and recovery of subsurface UXO; construction of UXO-related protective works; the location of surface UXO by visual means; transporting and storing UXO assuring compliance with Federal, state, and local laws; disposal of UXO by burning/detonation; preparation of an UXO disposal site; preparation of an on-site safe holding area for UXO. Determine UXO-related storage compatibility. Prepare an explosive storage plan. Supervise donning and doffing of personal protective equipment; operation of a personnel decontamination station; maintenance and operator checks on all team equipment. Prepare UXO related administrative reports; standard operating procedures. Conduct daily team safety briefing. Supervise: segregation of UXO-related scrap from non-UXO related scrap; safe handling procedures; team preventive medicine and field sanitation procedures. Perform risk hazard analysis; interpret x-ray of UXO. Supervise: field expedient identification procedures to ID explosive contaminated soil; the determining of a magnetic azimuth using a lensatic compass; emergency leak sealing and packaging of chemical warfare material.</p>

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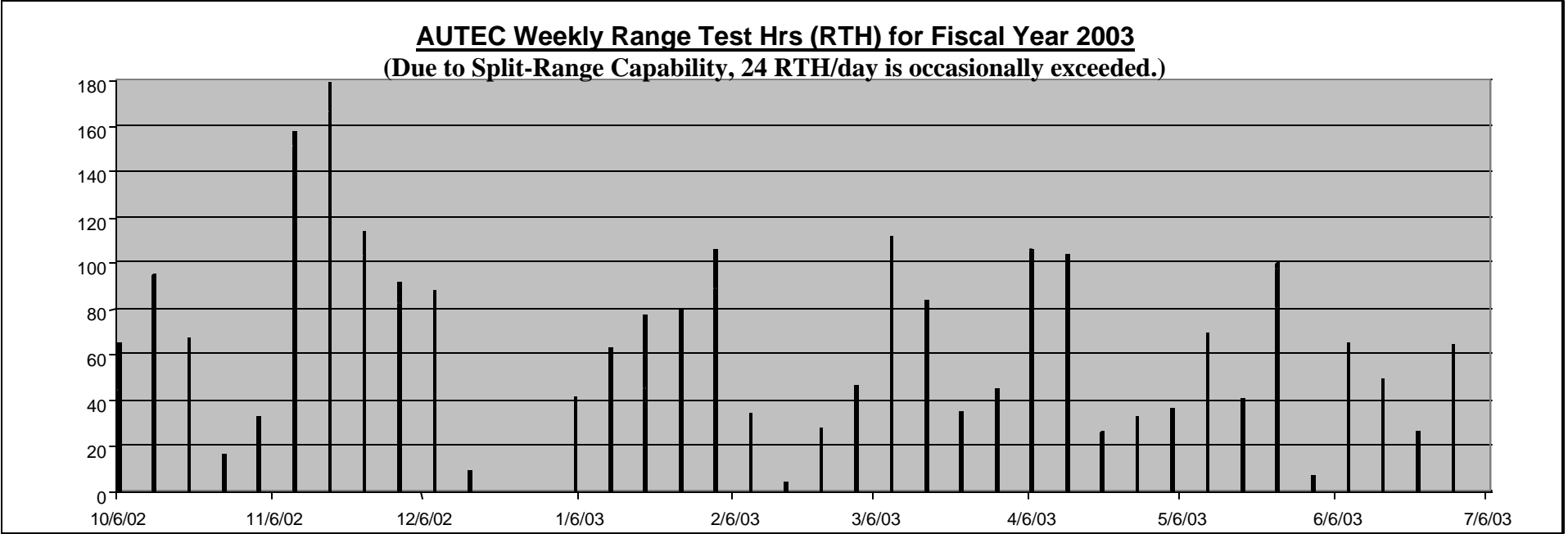
AUTEC POSITION TITLE(S)	LABOR CATEGORY		JOB DESCRIPTION
CLERK, VENDING	MISCELLANEOUS OCCUPATIONS	VENDING MACHINE ATTENDANT	Receives items from food and retail facilities or from immediate supervisor, and delivers items to vending machines. Removes aged food or other merchandise from machines, as required by established procedures. Replenishes machines, and makes appropriate notations on required records. Gives locked money boxes to supervisor or designated cashier. Inspects machines frequently to ensure that they are adequately stocked, in good working order, and are in a sanitary condition. Monitors brands and prices to ensure compliance with contract terms when vending services are provided on a contract basis. Notifies supervisor of any discrepancies observed. Accompanies concessionaires to make spot checks of collections. Tests operation of machines by inserting coins to determine if items are being dispensed properly and correct change is being returned. After testing, products obtained are placed back into the machines. Cleans interiors and exteriors of machines, using appropriate cleaning solutions; and cleans areas adjacent to machines including snack tables. Spot-checks machines visually to determine if any units are out of order. Notifies repairmen or immediate supervisor and places "out-of-order" sign on malfunctioning machines. May assist in the preparation of vending items, such as sandwiches, gelatin, and salads. May replenish vending areas with napkins, condiments, paper cup lids, etc. May open crates, cartons or boxes. May keep stockroom area in clean and orderly condition, and adhere to sanitation, safety, and security procedures.
BARTENDER	FOOD PREPARATION AND SERVICE OCCUPATIONS	WAITER/WAITRESS	Serves food and beverages to patrons at counters and tables of coffee shops, lunchrooms, and other dining establishments. Presents menus to customers, answers questions, and makes suggestions regarding food and service. Writes order on check or memorizes it. Relays order to kitchen and serves course from kitchen and service bars. Observes guests to fulfill any additional requests and to perceive when meal has been completed. Totals bill and accepts payment or refers patron to Cashier. May ladle soup, toss salads, portion pies and desserts, brew coffee, and perform other services as determined by establishment's size and practices. May clear and reset counters or tables at conclusion of each course or meal.
WAREHOUSEMAN	MATERIALS HANDLING AND PACKING OCCUPATIONS	WAREHOUSE SPECIALIST (WAREHOUSE WORKER)	As directed, performs a variety of warehousing duties which require an understanding of the establishment's storage plan. Work involves most of the following: Verifying materials (or merchandise) against receiving documents, noting and reporting discrepancies and obvious damages; routing materials to prescribed storage locations; storing, stacking, or palletizing materials in accordance with prescribed storage methods; rearranging and taking inventory of stored materials; examining stored materials and reporting deterioration and damage; removing material from storage and preparing it for shipment. May operate hand or power trucks in performing warehousing duties. Exclude workers whose primary duties involve shipping and receiving work (see Shipping/Receiving Clerk), order filling (see Order Filler), or operating forklifts (see Forklift Operator).
WELDER	MECHANICS AND MAINTENANCE AND REPAIR OCCUPATIONS	WELDER, COMBINATION, MAINTENANCE	Welds metal components together to fabricate or repair products, such as machine parts, plant equipment, mobile homes, motors and generators, according to layouts, blueprints or work orders, using brazing and a variety of arc and gas welding equipment. Welds metal parts together, using both gas welding or brazing and any combination of arc welding processes. Performs related tasks such as thermal cutting and grinding. Repairs broken or cracked parts, fills holes and increases size of metal parts. Positions and clamps together components of fabricated metal products preparatory to welding. May locate and repair cracks in industrial engine cylinder heads, using inspection equipment and gas torch. May perform repairs only. May be required to pass employer performance tests or standard tests to meet certification standards of governmental agencies or professional and technical associations.

Appendix 2.1

Test Planning and Conduct Flow Chart



Appendix 2.1.1



APPENDIX 2.2

GFP

- AUTECH's classified Local and Wide Area Networks (LAN/WAN), all resources attached to
- AUTECH's unclassified LAN/WAN, all Data Processing PCs attached to
- SIPRNET Workstations
- Desktop Tactical Computer (e.g. J5600)
- Vax 8350
- ♦ MicroVax II

DID Reports:

Title/Reference Work Order #	Frequency	Purpose or Description	Reporting
Range Recertification Test (935Y143)	As required (after each RMI or Range Standdown)	Recertification of tracking instrumentation	E-mail summary evaluation within one day of test completion.
Target of Opportunity Test (935Y137)	Bi-monthly (six times a year)	Verification of in-air and in-water track accuracy; abbreviated test with limited geometry.	E-mail summary evaluation within one day of test completion
In-Air/In -Water Tracking Test (935Y138)	Data collection concurrent with 935Y143	Detailed evaluation of in-air and in-water tracking systems on a surface vessel; geometry encompasses the entire in-water track area.	Quick-look e-mail summary evaluation within three days of test completion; formal report within 30 days thereafter.
Aircraft Tracking Test (935Y139)	Semi-annually (twice a year)	Evaluation of in-air tracking systems on an airborne platform.	Quick-look e-mail summary evaluation within three days of test completion; formal report within 30 days thereafter.

Table # **TBD**

APPENDIX 2.2

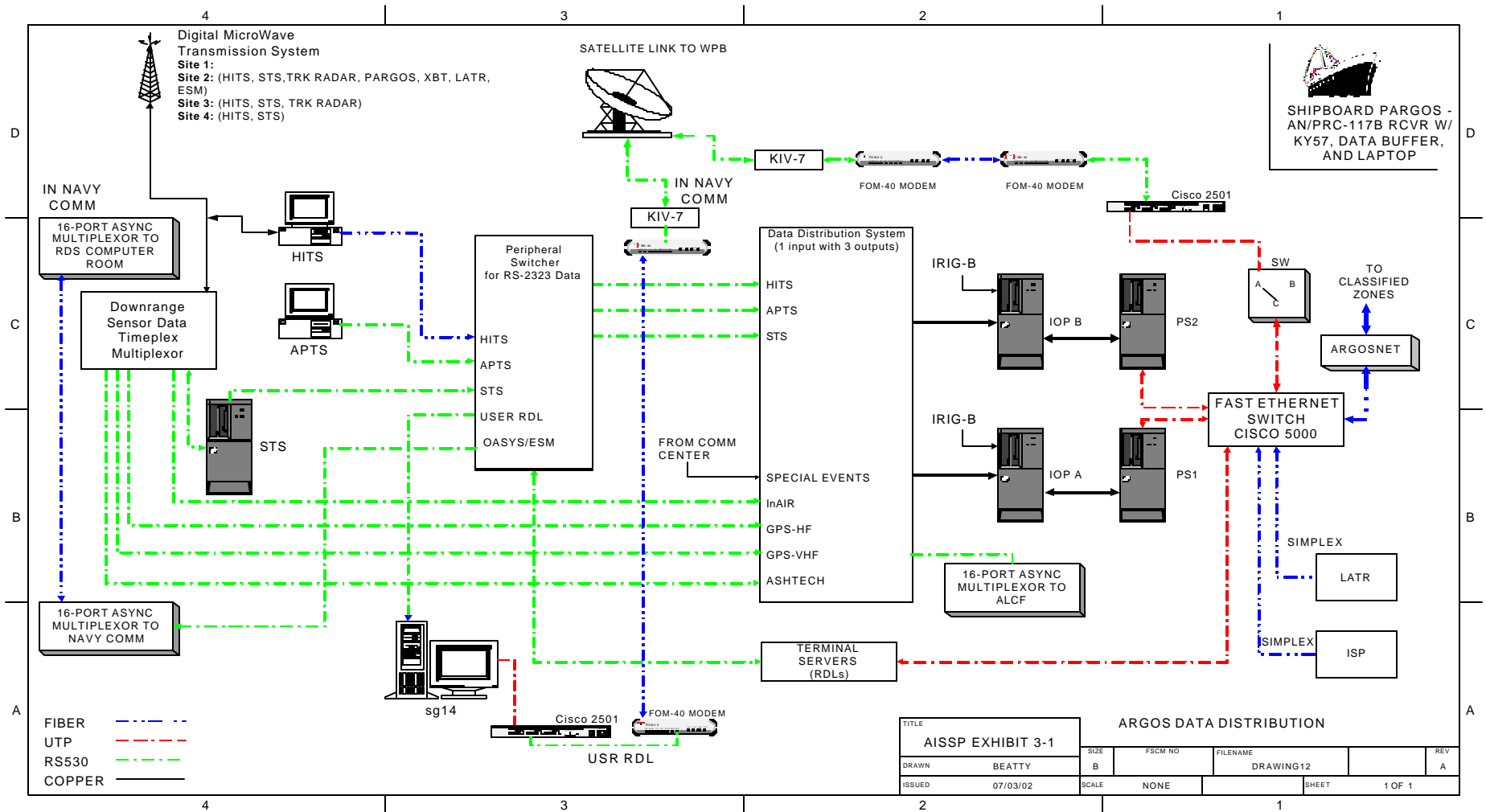
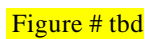


Figure # tbd



APPENDIX 2.3

Figures cited in this document will be added at a later date.

1.A. DETAILED SYSTEM OVERVIEWS

A. DEEP-WATER TRACKING

In-water tracking is accomplished through the generation of a series of acoustic pulses of known characteristics, emitted by an acoustic transducer, or pinger, attached to the object being tracked. These pulses are received by hydrophones, arranged in groups, or arrays, located in various areas on the floor of the Tongue of the Ocean. The in-water tracking system is comprised of: 68 multiplexed sensor nodes, utilizing four fiber optic strings and 15 individually cabled hydrophones. Sixteen of the 68 multiplexed sensor nodes are bi-directional, permitting both receipt and transmission of acoustic signals. The multiplexed fiber optic cables, and the individually cabled hydrophones, all terminate at Site 1. A legacy system of bottom-mounted hydrophones individually cabled to Site 3 and Site 4 remains in place, but is not utilized. **Figure 1** depicts the location of the various different tracking areas within AUTECH's Deep Water Tracking Range (1 weapons range) and location of bottom mounted tracking equipment. **Figure 2** depicts the major components of the deep water processing system, in block diagram form, together with associated supporting systems. The following discussion of the in-water processing system is generally keyed to these diagrams.

1. **Bottom-Mounted Hydrophone Arrays:** The Deep Water Range's bottom-mounted hydrophones are arranged in groups located seaward of Sites 1, 2, 3, and 4, which are respectively referred to, in total, as the Weapons Range (WR). The range may be divided into two or more areas for concurrent testing. A standing line of division is located at gridline "Alpha-Yankee" on the AUTECH range chart. The tracking area to the north of this division is referred to as Weapons Range North (WRN), while the area to the south of this division is referred to as Weapons Range South (WRS). The bottom mounted sensors are identified as the Ocean Sensor Subsystem (OSS) is comprised of deep water sensor nodes, electrical mechanical optical cables (EMOC), fiber optic multiplex telemetry, deep water pressure housings for the electronics, optics and acoustics, the interfaces (terminations) from the EMOC to the pressure housing, a cathode and tail cable. The multiplexed sensor nodes have a hydrophone bandwidth of 50 Hz – 40 kHz. The unidirectional (receive-only) sensor nodes consist of a hydrophone, receiving and signal conditioning electronics, power distribution, and Synchronous Optical Network (SONET) OC-3 optical telemetry components. The bi-directional sensor nodes, in addition to the above receive-only components, each encompasses a projecting transducer, a power amplifier, and a tuning network. Within the nodes, analog signals are sampled, converted to digital format, and merged with data from other nodes into a single stream of digital words, which are transmitted to shore via a fiber optic conductor. On shore, the

words are de-multiplexed into separate data registers respective of each hydrophone node. The hydrophones are suspended approximately 18 feet above the node. In addition to the digital hydrophones described above, 15 analog hydrophones are individually cabled and connected to the shore termination system. These sensors are similar to the legacy hydrophones cabled to Sites 3 & 4 as described below.

2. Shore Electronics Subsystem: The Shore Electronics Subsystem (SES) receives the 68 in-water acoustic sensor node's data over the optical fiber, and analog electrical signals from the 15 individually cabled hydrophones. The SES converts from the optical signal to electrical, de-multiplexes the data, provides 68 analog outputs, one for each of the sensor nodes along with a digital data output for all hydrophones, and a demodulated monitor output. The SES is capable of receiving an analog signal, data or voice, and transmitting this signal into the water via a series of bi-directional nodes. The SES will modulate voice into the underwater telephone (UQC) band, digitize the analog voice signal, transmit that signal to the selected bi-directional sensor node, and output the acoustic signal into the water. The in-water Digital Signal Processors (DSP) receive incoming analog signals from the SES and perform complex Digital Signal Processing (DSP) algorithms, which identify, verify, and validate the signals as required. Site 1 has one UNIX WorkStation networked to four VME chassis that contain the DSP hardware. Validated ping data is transmitted via fiber optic link to the Site 1 ARGOS Data Distribution System.
3. Underwater Communications System: The Underwater Communications System (UCS) is used for the transmission and reception of voice and data (see **Figure 3**). The actual hydrophone routing is transparent to the user who selects underwater channels for voice or data communications. The UCS hardware and software form the interface through which voice or data can be transmitted over the 16 bi-directional nodes or independently through the UQC/WQC projectors (AN/WQC-2A shore-site electronics) and received on any of the bottom mounted hydrophones. The existing UQC and WQC hardware suites are operated from Site 1 and are directly cabled to underwater transducers, independent of the bottom array. The AOIS provides the user with a predetermined voice channel for transmission/reception. Through the UCS PC interface, the user selects which bi-directional node will be mapped to the AOIS channel for voice transmission. Voice or data through the UCS is modulated for transmission. Through the same interface, the user can select the independent UQC/WQC for transmission where voice is passed through the UCS, un-modulated, to the UQC/WQC for transmission. Received data comes from any single bottom hydrophone and is passed through the UCS and the UQC/WQC (if selected) for demodulation and presentation to the user. In addition to the Site 1 UQC/WQC projectors, similar projectors are located at Sites 3 & 4 but are secured as a back-up system to the UCS. Units at Sites

3 & 4 are continually powered and are available for use through the AOIS. UQC/WQC at Sites 3&4 do not require an on-site operator.

4. Ancillary In-water Systems: In order to provide verification of the occurrence of certain critical events during selected on-range tests, an Acoustic Interface Monitoring System (AIMS) is installed at Sites 1. AIMS is connected to two Digital-to-Analog (DAC) channels on the SES which can be mapped to any bottom hydrophone. AIMS takes the received signal and frequency shifts it to the human hearing band with the resulting signal output to the AOIS. This allows the user to hear a translated version of pinger signatures, sonar or other high frequency events.
Integral to the Site 1 hardware suite are twelve TASCAM Digital Audio Tape (DAT) Recorders that are interconnected to allow the user to record acoustic data with simple, one panel controls. The recorders are capable of recording signatures up to 24kHz. Recorders are not part of standard operating procedure (SOP), but instead used for special tests or where there is an interest in being able to recreate a tracking exercise from the raw data. Units are self-calibrating with no user serviceable parts. To record at frequencies above 24kHz, a set of Ampex high speed digital recorders are provided. Used on a limited basis, these recorders accept the raw digital data stream from the array and store this to 6 hour tape cartridges. On playback, the SES must be optically patched to accept the recorder's data stream and then reconstruct the data into an analog format.
5. Legacy Hydrophone Arrays: The legacy bottom-mounted hydrophones cabled to Site 3 & 4 consist of 40 kHz resonant spheres of PZT-5, having an upward-looking hemispherical beam pattern. Each hydrophone is individually cabled ashore. While presently available for operational use at Sites 3 & 4, these hydrophones are in a STANDBY status. STANDBY status in this instance is defined as the hydrophones are powered, but left unattended except for periodic government monitoring. The cables from 28 of the W3/4 bottom-mounted hydrophones in the northern range area terminate at an offshore tower off Site 3, while the cables from the remaining 24 bottom-mounted hydrophones terminate at a tower off Site 4.

B. IN-AIR TRACKING

The following systems comprise the in-air tracking capabilities at AUTEK:

1. The MMSR is an Air Traffic Control (ATC) type S-band surface and surveillance Radar that is operated from Site-2 and sweeps a 360-degree arc every 4 seconds. The two dimension (X, Y), skin track data from this Radar is displayed locally and at a Site-1 workstation. A total of 600 simultaneous objects can be tracked with this Radar.

2. LATR is a U.S. Navy differential GPS based positioning system that can simultaneously track up to 124 surface or airborne instrumented objects, providing a TSPI output via an RF data link. High altitude aircraft can be tracked at ranges up to 160 nautical miles without relay. This system broadcasts from a Ground Interrogation Station (GIS) at Site-2 to on-range Range User platforms instrumented with Participant Instrumentation Packages (PIP) and receives replies containing TSPI data. The Site-2 GIS sends the TSPI data to Site-1 where it is injected into the ARGOS Host Computer, merged, archived, and displayed during real time test conduct. The LATR system is interoperable with LATR systems at several other Navy test and tracking ranges and facilities, as well as with AUTECH's AMSWR and PTS systems. The LATR system is operated from the Site 1 Computer Room.
3. The HITS is an RF-based multilateration system of 4 receiver sites which operates in the X-band. It uses beacon hardware to track instrumented airborne and surface objects. This system provides precise two dimension (X,Y) track of up to 10 surface or airborne objects simultaneously. Receiver processors, located on the microwave towers at Sites 1, 2, 3, and 4, send processed information to the Hyperbolic Processor at Site-1. The Site-1 Hyperbolic Processor passes the time tagged 2 dimensional position data to the ARGOS Host Computer(s) for merging, archiving, and display with other tracked objects. Additionally, there is a Reference Beacon Transmitter at Site-1.
4. The AIRS track Radars operate in either beacon or skin (augmented or un-augmented, ie. coded or uncoded) track mode. In beacon mode, AIRS Radars provide precision three dimensional track (X,Y,Z) of single objects at rates up to 1,000 times each second. The coded beacons are standard AN/DPN-78 coded X-band transponders. The time tagged azimuth and elevation data collected from these systems are transmitted to Site-1 over the microwave communications system. Skin track of non-instrumented objects may also be accomplished, but with less accuracy.
5. Two other Radar systems, one tower mounted surveillance radar, and one modified AIRS radar, are used for special range user experimental tests, and are restored to operational status only on demand, with a 30-day advance notice.
6. The STS is an interferometer-based system that receives and autonomously tracks the RF carrier signal from deployed, standard U.S. Navy sonobuoys on the southern half of the AUTECH deep water tracking range. STS provides two-dimension track (X,Y) of up to 40 floating sonobuoys simultaneously on any of the standard ninety-nine (99) sonobuoy channels. Slightly Modified R-2271/ARS-5 receiver/converter systems, located at Sites 2, 3, and 4, process and time tag the received signals using 6 in-line antennas mounted on 40 foot poles at each site. The digitized time-tagged signals are sent to the STS Computer(s) at Site-1 for determination of track positions. The two dimensional track positions, updated once every 30 seconds, are sent to the ARGOS Host Computer(s) for merging, archiving, and display with other track information. Low velocity (30

knots or less) surface objects may be instrumented with a Sonobuoy Simulator and tracked with STS in lieu of the other AUTECH in-air tracking systems.

7. The Ashtech Carrier Phase Differential GPS is the primary reference system for precise position location at AUTECH and is used to survey critical positions of tracking sensors for data collection purposes. It can also be installed on a surface craft to provide autonomous dynamic track to the Range Host Computer(s).

C. AUTECH MINEFIELD AND SHALLOW WATER TRACKING RANGE (AMSWR)

AMSWR operations reside on a section of Little Stirrup Cay (LSC) where it is continually connected to the bottom mounted array of 45 hydrophones via the underwater cable and operationally controlled either at LSC or remotely from AUTECH Site 1. Operations are typically conducted from Site 1 via the Special Projects Operations Center (SPOC), but situations may exist where personnel will be transported to LSC to support operations directly while transmitting track displays to Site 1 for viewing. The range layout is shown in [Figure 4](#). The network and communications flow between LSC and AUTECH Site 1 is given in [Figure 5](#).

The range provides a mobile underwater/in-air instrumented range capability in ocean depths from 400 to 2000 feet. AMSWR is capable of tracking in real-time: torpedoes; mobile targets; submarines; Unmanned Underwater Vehicles (UUVs); Submarine Launched Mobile Mines (SLMMs); surface ships; and Antisubmarine Warfare (ASW) fixed and rotary wing aircraft when equipped with proper range tracking hardware. The system provides support for reliable testing and evaluation through real-time and post-test processed positional data.

AMSWR consists of many of the same components that are contained within PTS. Operationally, the range and its support systems differ only in location from that which is used in PTS. A description of the AMSWR components is provided for consistency however; their functionality is identical to equipment used in PTS (Section D), except where noted.

1. Shore Facility: LSC operations are contained within a two story building on property that is leased to the Government. The building serves as the on-site operations center and houses all shore termination, computer and communications equipment. When the range is operated locally, the building provides berthing for four personnel. Through the Government lease, the building also provides all sanitary facilities such as electricity, water and sewage.
2. Bottom Mounted Array: The primary in-water subsystem consists of a single 50 mile underwater cable that is populated with 45 in-line acoustic sensors called hydrophone nodes. The sensors are located in depths ranging from 400-1600 feet and cover an operational area of 80 square nautical miles. These in-line sensor arrays provide time-division-

multiplexed communication of acoustic data on a fiber-optic cable to the shore systems. An underwater junction box is placed in 100ft of water for accessibility and serves as the connection point between the array and the cable that runs ashore at LSC. The PTS hydrophones are designed to operate over a useful frequency range of 8 - 45 kHz. Three PTS hydrophones called "Low Frequency Nodes" are designed with an operating frequency range of 100 Hz - 45 kHz. These are powered from a shore-based termination electronics system and which in turn takes the hydrophone output and provides it to a Digital Signal Processing System.

3. Digital Signal Processing: The Digital Signal Processor (DSP), located at LSC, detects and time-tags the arrival of the acoustic signals emitted by a range vehicle's tracking pinger. The DSP is based on a set of commercial off-the-shelf (COTS) VME boards. The board set includes a SPARC 5CE controller, hard disk, IRIG-synchronizer/generator, VME Clock and Timing (VCAT) interface board, and up to 15 Octal TMS320C40 DSP boards. One complete system, which can serve 60 hydrophones, consists of the board set housed in a 19-inch VME chassis. Two complete chassis are required to support system operations. The processor is programmable and capable of detecting multiple ping formats, allowing for the expansion to future algorithms.
4. Computer Processing System/Networks: All tracking and system control functions may be performed at either site using Intel based hardware with a Solaris operating system. These platforms provide the computing resources necessary to perform the range functions of range hydrophone survey, vehicle tracking, real-time data acquisition, range safety monitoring, exercise control and post-exercise analysis. Computer software is supported through a teaming effort with the Government. The Government develops and maintains the necessary software while relying on input from the contractor to improve quality. A duplicate computer/network suite exists at LSC and Site 1 to allow for operations from either site. When operated from Site 1, the computer network interfaces to a satellite data communications link to remotely control LSC operations.
5. RF Communications: The shore system is configured to support in-air communications with radio equipment for 4 channels: 1 for High Frequency (HF), 2 for VHF, and 1 for UHF. The radio transmitters are located at LSC and are controlled via a COTS matrix system that can be operated locally or remotely from Site 1. Roof mounted antennas are permanently installed and easily accessible for periodic maintenance with no special permits or licensing required.
6. Satellite Data Communications: Residing on a separate concrete platform, a satellite antenna system provides the link between LSC and Site 1 for all data communications. When operated normally, Site 1 operations are conducted via the satellite link to control all LSC hardware.
7. In-Air Tracking: In-air tracking is performed using a LATR complement of hardware. This system is a DGPS-based tracking system that provides

TSPI data for aircraft and surface platforms if they are equipped with a LATR Participant Instrumentation Package (PIP). Computed in-air positional data, in latitude/longitude format, is presented to the AMSWR computer based tracking interface for reformatting, smoothing, and display. Unlike the portable system denoted as PTS/LATR, the shore based operation takes advantage of the Site 1 AMSWR/LATR system. By using a LATR component called the Ground Interrogation Station (GIS), data is received from the on-range participants at LSC and then transmitted to the AMSWR Site 1 LATR system via the satellite network. At Site 1, the AMSWR/LATR performs the necessary calculations and returns the Time Space Positional Informational (TSPI) data to LSC for track display, when the system is operated locally. When the range is manned from Site 1, the AMSWR/LATR TSPI data is simply passed via the operational network to the Site 1 AMSWR tracking displays. All LATR software is provided and supported by manufacturer (SAIC). **Figure 6** is a depiction of the three hardware racks that provide ground support for LATR.

8. Diagnostics/Remote Control: Remotely from Site 1, the AMSWR shore side hardware suite and underwater hydrophones can be monitored from Site 1. Combined Hydrophone Acoustic Spectral Monitor (CHASM) provides the ability to confirm hydrophone operation by viewing the individual spectral response for each hydrophone. All power systems are connected to a network addressable device that allows power to be monitored as well as turned on/off. Environmental sensors and webcams provide status as to the interior and exterior condition of the building and the range.

Site 1 Operation: A duplicate suite of computer/network hardware is installed in the Site 1 SPOC from which control of AMSWR can be executed. Raw signal detection data is acquired at LSC and then telemetered to Site 1 for tracking, processing, display and archiving. All radio controls and system capabilities mirror those provided on LSC. AMSWR data is then available for customer viewing in either the SPOC or within either of the unused real time display rooms.

D. PTS

The AUTECH Portable Tracking System (PTS) consists of 50 miles of underwater cable stored in protective trailers for temporary deployment in addition to other equipment defined below.

As stated under the AMSWR description, the (PTS) shares much of the same functionality of the AMSWR and as such, its operational requirements are similar. Where PTS differs is that its components are supported within portable containers that serve as operational and workshop centers. PTS can support the same operational functions as AMSWR plus the ability to operate as an independent laboratory that can support recoverable tracking arrays, underwater acoustic surveys of other ranges and in-

air tracking exercises. For completeness, some functionality that is shared by AMSWR is repeated below in addition to capabilities that are unique to PTS due to its portability.

The PTS was designed to support tracking operations in littoral environments at sites anywhere in the world. The PTS can be operated from a moored vessel at sea or from a land-based site. These features allow the PTS to be deployed and operated at sites physically remote from the Andros Ranges. The PTS consists of a set of modular components that can be interconnected to form various levels of test support. The modules consist of in-water hardware, Portable Range Operations Center (PROC), Large Area Tracking Range (PTS/LATR) hardware and a storage/workshop container. The in-water equipment consists of the Buoyed Acoustic RF Telemetry System (BARTS). The PROC and PTS/LATR are housed in two independent enclosures that are designed to support both shipboard and land-based operations. The PROC and PTS/LATR are designed to be easily transportable and can therefore be used to support tracking operations at multiple sites through proper scheduling. Contained in the PROC are the subsystems used to conduct tracking operations including in-water tracking, in-air tracking, data processing, and communications. In-water/in-air tracking, all real-time display, and the range track data collection are supported by the Automated Data Processing Subsystem (ADPS), which uses the Navy Tracking and Display System (NTADS) software. **Figure 7** depicts the PTS System.

1. Buoyed Acoustic RF Telemetry System (BARTS): The primary in-water detection system for PTS is the Buoyed Acoustic RF Telemetry System. BARTS consists of up to 36 independent buoys that are anchored to the bottom via an electro-mechanical cable. Raw acoustic data is collected from a hydrophone near the bottom, transmitted to the surface buoy via the electro-mechanical cable and finally transmitted back to the shipboard systems via VHF transmitter that operates in the Navy's sonobuoy band. The surface floats are equipped with an electronics package that includes a VHF transmitter, rechargeable battery pack, an integral flashing navigation light, and radar reflector. The BARTS is a very portable in-water system that is deployed for short term operations, generally from one day to a maximum of a few weeks. **Figure 8** depicts a single BARTS buoy.
2. Portable Range Operations Center (PROC): All in-water/in-air tracking, real-time display, range track data collection, test conduct, and range safety functions are controlled from the PROC. Contained in the PROC are the tracking/display computers of the ADPS, the communications subsystems, and two 50 channel capable digital signal processing subsystems consisting of a Versa Module Eurocard (VME) based signal processor and the Signal Distribution System (SDS). The PROC is designed for deployments either at sea or to remote land-based sites, and its data can be merged with that of the AMSWR in instances where AMSWR is expanded through the use of BARTS. The PROC can also accept in-air data provided by PTS/LATR or through specially configured GPS targets.
3. Automated Data Processing Subsystem (ADPS): All tracking and system control functions are performed using Intel based hardware with a Solaris operating

system. These platforms are identical to those provided under AMSWR and provide the computing resources necessary to perform the range functions of range hydrophone survey, vehicle tracking, real-time data acquisition, range safety monitoring, exercise control and post-exercise analysis. Computer software is supported through a teaming effort with the Government. The Government develops and maintains the necessary software while relying on input from the users to improve quality. This area is identical to the Computer Processing System/Networks section under AMSWR except that the capabilities are contained within a set of portable enclosures.

4. PTS Communications System: The PTS is configured to support in-air communications with radio equipment for 5 channels: 1 for High Frequency (HF), 2 for VHF, and 2 for UHF.
5. Digital Signal Processors (DSPs) (PTS): The Digital Signal Processor (DSP), located with the PROC, detects and time-tags the arrival of the acoustic signals emitted by a range vehicle's tracking pinger. The DSP is based on a set of commercial off-the-shelf (COTS) VME boards. The board set includes a SPARC 5CE controller, hard disk, IRIG-synchronizer/generator, VME Clock and Timing (VCAT) interface board, and up to 15 Octal TMS320C40 DSP boards. One complete system, which can serve 60 hydrophones, consists of the board set housed in a 19-inch VME chassis. Two complete chassis are required to support system operations. The processor is programmable and capable of detecting multiple ping formats, allowing for the expansion to future algorithms.
6. In-Air Tracking System (PTS/LATR): In-air tracking is performed by the PTS/LATR, a van housed equivalent of the range LATR system. Computed in-air positional data, in latitude/longitude format, is presented to the ADPS GPS interface for reformatting, smoothing, and display. The PTS/LATR is a self-contained DGPS tracking system consisting of 3 full-size Tactical Advanced Computer Four (TAC-4)(72" H x 24" W x 32" D each). PTS/LATR system surface tracking coverage area will vary depending upon the height and position of the UHF antennas but is expected to cover, at a minimum, the instrumented underwater tracking portion of PTS. System in-air coverage is also dependent upon aircraft height, but can be as much as 125 nmi. PTS/LATR hardware includes: one HP Tactical Advanced Computer Four (TAC-4) computer, two HP-742rt VME form computers, various power supplies, one AN/URY-3 transceiver, one GPS time code generator, one LEICA MX9112R DGPS receiver, one X-terminal maintenance console, three rack-mounted UPS units, and five antennas (two omni-directional and three GPS).

E. SIMULATION/STIMULATION SYSTEMS

1. The AUTECH Electronic Support Measurement (ESM) System: The AUTECH ESM System is an active radar threat simulation system, separate from the NFA ESM System. The processing and active emitter system is located at Site 2 with

command and control functions carried out by an operator at Site 1. A Site 2 base of operations is maintained for the development of scripted operational scenarios and unique testing that cannot be conducted from Site 1. The system receives ARGOS real time track via the microwave link to allow the active emitters to track a target throughout a previously scripted scenario. Hardware includes a Combat Electromagnetic Environment Simulator (CEESIM), active RF antennas and power amplifiers, a tower for supporting the antennas and PC based architecture to provide operational control of the system. The threat simulator (CEESIM) is built around a proprietary software program in the UNIX environment. Operational control program is also proprietary and is run under Win/NT. A network block diagram is given in **Figure 9**.

Typical operation of ESM involves an operator to load a GFI scenario based on customer input. Scenarios are scripted command sequences that generate different radar threats throughout a prescribed period. Once initiated, no operator involvement is required. At the end of a predetermined period, the system will terminate all active components and wait for operator intervention. Infrequent unique tests may require direct operator intervention for test conduct. Here, the operator will be directed to initiate and terminate emitters (signal generators) based on the customer's requirements. The emitters are GFI building blocks from which scenarios are built but can also be used as solo RF threats.

2. Advanced Sonobuoy Simulation System (AS3): AS3 can simulate the acoustic response and ocean drift of 8, with expansion to 32, sonobuoys simultaneously. Through RF links to range aircraft, AS3 records the virtual deployment of a sonobuoy and in turn generates the acoustic parameters that could be detected by a real sonobuoy. This data is then telemetered to the aircraft through its existing sonobuoy data link for onboard processing. Located at Site 2, but controlled from Site 1, the system interfaces to ARGOS to gain information on the track position of the in-air participant. Data communications with the range participant is conducted via a secure data link called Hawk Link. AS3 participant track, actual and virtual sonobuoy locations/track are transmitted through video buffers for display in the Real Time Operations room without ARGOS display control. A system flow diagram is given in **Figure 10**.

AS3 is an operator controlled system which requires direct observation and/or intervention throughout customer events. The AS3 user interface provides the operator with direct control of all AS3 functions, and the ability to monitor various in-air platform functions. Typical operation will involve system start-up and establishment of a RF link with the in-air platform. Once data communications are established, the operator will initiate a computer scenario, generated by Government sources, that will involve real and/or simulated targets within a physical range area. The in-air platform will electronically initiate the deployment of a simulated sonobuoys, which the AS3 simulation will track and model as to how it would receive real acoustic data. Then simulated acoustic data is transmitted automatically through the standard sonobuoy RF data transmission path to the aircraft. All AS3 software is proprietary of the vendor.

3. Multi Link Simulation Test/Training Tool (MLST3).

The MLST3 provides a seamless training environment for Undersea Warfare (USW) multi-mission platforms using realistic off-board stimulus to emulate actual operational system conditions. This is done to enable “end-to-end” concurrent multi-mission capability evaluation to maximize training efficiency and productivity. All USW platforms, including fast attack submarines, surface ship, SH-60 helicopters, and P-3 fixed wing aircraft, can be supported within this training environment.

AUTEC uses the MLST3 to provide the following capabilities:

- Two-way tactical datalink capabilities between vessels using the AUTEC range and the AUTEC range control center.
- Datalink capabilities to support a single unit operating on the range.
- Datalink capabilities to support multiple units up to and including a full battle group.
- Datalink and tactical equipment test capabilities that allow the isolation of datalink failures to a specific Fleet or Range asset and support datalink failure diagnostics at the asset level.
- Stimulation of tactical communications equipment using simulation data from local and / or distributed simulations.

The MLST3 simulates the communications environment and message exchange capability of up to five TADILs, up to eight near real-time (NRT) interfaces, and N-Series Low Level Serial (LLS) monitor operating simultaneously. The datalinks supported include:

- Link-11 datalink simulation and stimulation.
- Link-16 datalink simulation and stimulation.
- OTCIXS datalink simulation and stimulation.

4. Other SIM/STIM capabilities include:

- Secure voice communications integrated with JTIDS secure voice communications.
- Communication of link data for a minimum of 500 targets.
- Local live, remote live, local simulated, and remote simulated targets seamlessly, e.g., so that the platforms receiving link data are unaware of the method for generating the target.
- Minimum datalink coverage of 80% of the tracking area of the AUTEC range in all weather judged suitable for training operations.

The MLST3 and COMM system interface with existing AUTEC simulation systems for the generation of targets. **Figure #11** depicts the Site 1 MLST3 and COMM equipment. **Figure #12** depicts the Site 2 MLST3 and COMM equipment.

F. ACOUSTIC TESTING AND ENVIRONMENTAL MEASUREMENTS

AUTEC periodically requires in-situ acoustic and environmental data. The measurements require the deployment of a calibrated sensor/system, the controlled acquisition and recording of data, real-time and/or posttest data processing, and the reporting/delivery of test results.

Acoustic Testing consists of signature measurements for devices such as surface ships/vessels, submarines, torpedoes, autonomous or unmanned underwater vehicles (AUV/UUV), remotely operated vehicles (ROV), buoyantly propelled test vehicles, acoustic countermeasures, and sonar systems. AUTEC has a variety of portable acoustic measurement/monitoring systems which include: the Deployable Noise Measurement (DNM) System, the Portable Measurement System (PMS), and the Portable Sonobuoy Measurement System (PSMS). System descriptions are as follows:

1. The DNM System is normally maintained at Site 1 and is used to support tests in the TOTO area. However, it is possible to transport and utilize the system at remote locations. In general, the system consists of a ship-deployed vertical array of acoustic sensors and shipboard electronics installed in a portable van. Real-time tracking is required to provide positional and range-correction data for DNM testing. Tracking is provided by either the AUTEC in-water/in-air tracking systems or by the Synchronous Tracking and Ranging System (STARS). When utilizing the STARS, special in-water tracking pingers must be installed on the test vehicles to provide the synchronous track required. **Figure #13** shows the DNM System Block Diagram, and the main subsystems are listed below:
 - a. The DNM array consisting of a spar buoy, a vertical directive line array with in-water electronics, up to six omnidirectional hydrophones, a tracking pinger, a safety beacon, a depth sensor, and a weight to keep the array vertical.
 - b. A 2500-foot electromechanical cable which transmits acoustic data to the Shipboard Electronics System.
 - c. The Shipboard Electronics System which provides power and signal conditioning for the array sensors.
 - d. The Real-Time Acoustic Measurement System (RTAMS) which consists of the Real-Time Acquisition System (RTAS) and the Post-Processing System (PPS). RTAS provides pretest system calibration and then filters, amplifies, records, digitizes, and displays the acquired data in real-time. The acquired data are then transferred to the PPS via a network link for near real-time data processing.
 - e. A variety of data recorders used as back-up to the RTAS.
 - f. The 16-channel Strip Chart Recorders which provide amplitude verses time data.
 - g. The Fast-Time Analyzer (FTA) System which provides frequency verses time LOFAR-type data.

- h. The Shipboard Quiet Inverter System which provides quiet power to both the DNM deployment platform and the DNM electronics van during acoustic signature measurements to prevent contamination of the data.
 - i. The STARS is used for independent synchronous track, when required.
- 2. The PMS is a simple, light-weight, battery-powered system typically deployed from a vessel while all shipboard machinery is secured. The PMS configuration is shown in **Figure #X TBP**. Components for up to three systems are available and may be operational at any one time; or the arrays may be married together to provide one multi-phone system. Data are acquired, processed, and displayed in real-time using PC-based spectrum analyzers while simultaneously recording the data on digital audio tape to allow for further post-processing. The PMS uses many of the DNM System components. System calibrations are provided by RTAS. The omni-phones are common to both systems. The data recorders are often the DNM back-up units, and the Strip Chart Recorders and FTA may be used for post-test data processing via tape playback.
- 3. The PSMS, block diagram shown in **Figure #X TBP**, records and processes acoustic signatures gathered and transmitted by calibrated fleet sonobuoys. The receiving station is typically onboard a range craft, but a shore-based station could be used if it is located within five nautical miles of the deployed buoys. If range-corrected data are required, the Sonobuoy Tracking System on Weapons Range South may be used for tracking the sonobuoys while the vehicle is tracked either by AUTECH's in-water or in-air systems. Relative range data may then be determined. This system utilizes some components of the PMS and the DNM System for its acquisition and processing, thereby maximizing asset usage. The only system components specific to PSMS are the sonobuoy receivers and antennas and the sonobuoys themselves.
- 4. AUTECH has a portable and a fixed-array SSRNM System. The portable system is smaller but similar to the DNM System and uses AUTECH's Shipboard Quiet Inverter System for its quiet power. The fixed-array system consists of a bottom-mounted array located approximately ten nautical miles north of AUTECH's Site 1. The array cable runs along the ocean floor to and terminates in the SSRNM Data Acquisition and Processing Center located on the first floor of the Command and Control Building where operators acquire and process narrowband and 1/3 octave data. The SSRNM tracking system, strip chart recorders, and LOFAR-grams are all automated.
- 5. Environmental measurements conducted at AUTECH consist of ambient data collection using any of the acoustic testing systems described above. In addition, Temperature versus Depth (XBT), Conductivity/Temperature/Depth (CTD), and Acoustic Doppler Current Profiler (ADCP) measurements are often made in order to characterize the AUTECH environment. A portable MK12 XBT System is used on vessels not having a permanently installed system and/or at remote locations. For more detailed data, AUTECH has two CTD Systems. The OS 2000 is a small, light-weight hand-deployed unit with a maximum operating depth of 700 feet. The Sea-Bird 25 System is a more capable and robust unit that must be deployed using a winch. Its maximum operating depth is 2230 feet, and it can

accommodate optional sensors such as pH, fluorescence, optical backscatter, etc. Finally, a NUWC-provided and NUWC-operated ADCP System is available for current profiling. The M&O Contractor has only minimal involvement with the ADCP.

6. In addition to the portable environmental measurement systems, a weather station is mounted off Site 1 on the southern jetty. This weather station measures such data parameters as average wind speed, wind gusts, wind direction, temperature, humidity, barometric pressure, and rain fall. This data is sampled once every ten minutes and is archived in a data base accessible on the AUTECH Website. Data is periodically downloaded from the archive and provided to customers as a data product. A continually updating snap-shot of this data is also displayed on television via AUTECH Channel 4. Finally, this data is used by a specially-written software program to calculate wave height in the TOTO. This can also be a customer data product.

In order to keep the systems operational, the M&O Contractor completes routine, monthly preventative maintenance and performs corrective maintenance on failed system components.

Based upon these requirements, the Contractor shall decide which measurement system should be used and determines whether any hardware and/or software changes shall be required. System changes are made as needed. Test personnel are scheduled. The system shall be configured, calibrated, and loaded onto a measurement platform (as appropriate), and an at-sea system checkout is performed.

With the variety of measurement systems available, the number of system operators varies depending upon which system is selected for trial support. Therefore, operator positions are determined on a test by test basis. Real-time data are acquired in accordance with test plans and/or run agendas which are typically provided by the customer. Every attempt is made to produce all required data products in near real-time. Data that cannot be provided in near real-time are processed/generated posttest.

Once data processing is complete, the Contractor shall perform quality assurance checks and then turns the data over to a NUWC Data Certifier for final approval. Any problems noted by the NUWC Data Certifier shall be corrected. The data shall be packaged, given the proper security markings, and receipted for delivery to the customer. A data library shall be maintained at AUTECH for future reference.

G. NFA RANGE/SENSOR ACCURACY TESTING

NATO FORACS provides NFA with certain assets and test support equipment that are common to all NATO FORACS ranges. The programmatic management of these assets is funded separately by NATO FORACS and coordinated through the NFA Range Manager who is the interface between NFA, the NATO FORACS Office and other ranges. The NFA Range Manager develops the annual budget for these assets,

communicates the policies and priorities of NATO FORACS with respect to these assets, and assists with the interpretation of applicable NATO FORACS instructions.

The primary mission of the North Atlantic Treaty Organization Naval Forces Sensor and Weapons Accuracy Check Site (NATO FORACS) Program is to conduct combat system-related Sensor Accuracy Tests (SATs). These tests measure the accuracy of target localization and on-board navigation sensors installed on surface ships, submarines, and helicopters of both U.S. and foreign Navies. Sensors tested include: sonars; search radars; heading sensors; periscopes and peloruses; gun/missile fire control radars and optical systems; and electronic support and countermeasure (ESM/ECM) units. In addition to being certified by the NATO FORACS Program, the NFA Range is certified by COMNAVSEASYSCOM. The NFA Range is a 7 by 12 nautical mile area of the TOTO located directly off Site 1.

The NFA Range (simply known as the FORACS Range) is a TSPI tracking range, used mostly to test helicopter and surface ship ASW sensors. Sensor Accuracy Testing may also be conducted at a remote location, convenient to the Range User, using Mobile FORACS test procedures. The AUTECH ASW sensor data acquisition and analysis program is designed to acquire, process, and provide data deliverables in standard NATO as well as COMNAVSEASYSCOM formats. This does not, however, preclude the use of the range facilities or technologies for other test applications or technical evaluations.

Submarine SATs are normally conducted on AUTECH's Weapons Range, where testing may be conducted at various keel depths. These operations permit the testing of sonars and Radio Directional Finding (RDF) units under operational conditions. RDF testing may also be accomplished in the open ocean with portable test equipment.

Figure #TBD shows major system components, including: the tracking system; the sensor targets; on-shore control console; shipboard equipment; and the Site 1 data processing facility.

APPENDIX 2.3A

GFP

ASSET ID	AUTEC ID	DESCRIPTION	PART NO	MANUF	MODEL NO	PROP CLASS	LOCATION	COST
638210 03972	PL0002 704	RADAR SURVEILLANCE- AIRS	FPS-08- AT14101	AUTEC	FPS-08- AT14101	OPE	2001RTRB LDG	\$ 62,000.00
638210 04921	PL0002 316	RADAR SURVEILLANCE- AIRS	FPQ-08- AK13400	AUTEC	FPQ-08- AK13400	OPE	2002	\$ 235,000.00
638210 03903	PL0002 735	RADAR TRACKING-AIRS	FPB-08- AK15200	AUTEC	FPB-08- AK15200	OPE	2002	\$ 250,000.00
638210 04318	PL0002 551	RELOCATABLE RADAR VAN	OLD NIKE/HER C	US ARMY	OLD NIKE/HE RC	OPE	1676	\$ 2,000.00
638210 07444	PL0001 226	TRAILER FLATBED RADAR	8523465	UNKNOWN	8523465	OPE	1539	\$ 5,000.00
638210 07445	PL0001 226	TRAILER FLATBED RADAR	8523465	UNKNOWN	8523465	OPE	1001OUT1	\$ 5,000.00
638211 90549	PL0004 597	HITS SLAVE STATION	HSS-2000	NEMONICS INC	HSS-2000	OPE	2002	\$ 17,000.00
638211 90548	PL0004 591	RECEIVER HITS		AUTEC		OPE	2002	\$ 350.00